

Ceramics and Social Practices at Ille Cave, Philippines

Volume 1: Text

Yvette Ellerayne Balbaligo

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I, Yvette Ellerayne Balbaligo, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Abstract

This research uses ceramic analysis to investigate variations in technological practices in the Philippines, and the relationships with pottery traditions previously reported for wider Southeast Asia. The thesis focuses on an examination of the earthenware ceramics from the multi-period burial and occupation site of Ille Cave and Rockshelter, and nearby cave sites in northern Palawan, Philippines. Previous work on Philippine ceramics has used surface decorations to discuss grand narratives of human movement. This thesis argues that technology, rather than decoration or style, is a better indicator of people and social practice. While critiquing these dominant interpretations, this thesis seeks to build on previous work by demonstrating how differences in ceramic technology can be interpreted as indicators of distinct learning traditions and learning networks, suggesting different communities of practice.

The range of techniques used to prepare the clay, form and decorate the ceramics, were analysed macroscopically in hand specimen, and microscopically by petrography, stereoscopy, and scanning electron microscopy to reconstruct the *chaîne opératoire* which shows difference in technological practice. Results indicate that most of the ceramics were locally made and used as votive offerings rather than as grave goods, jar burials or for ritual breakage, during the Developed Metal Age. The cave sites were returned to as a fixed point in the landscape to commemorate the dead. It is suggested that the variability in ceramics coupled with the mortuary practices were expressions of a group's social complexity and cultural identity. The ceramic variability shows distinct cultural pluralism which demonstrates a diversity of social groups in a small locale. Although some commonalities in pottery production and decorative techniques with those in wider Southeast Asia are discussed, the current lack of dating evidence or comparative ceramic technology studies makes it difficult to interpret the direction and timing of large scale cultural change. This thesis, however, presents methods and theories for how this research can be developed.

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Glossary

The following glossary provides the key terms and concepts used in this thesis and that are specific to this research. Occurrences of where discussion of these key terms and concepts appear are indicated by chapter number.

Key terms and concepts	Chapters
Austronesian Dispersal Model a grand narrative of Southeast Asia which uses linguistic evidence as a proxy indicator for past population movement. The Austronesian homeland has been hypothesised as Taiwan with people spreading southwards from c.4000 BP (c.2500 BC). It was proposed that Austronesians travelled with a Neolithic ‘package’ comprising animal and plant domestication, and material culture including ceramics, shell artefacts and ground stone tools (see Bellwood 1978, 1997, 2005; Bellwood and Dizon 2008; Blust 1976, 1988, 1995; Donohue and Denham 2010; Dyen 1971).	1, 2, 7
Bleb an anthropogenic synthetic inclusion made from fired clay mixed with rice for use as temper.	2, 6
Ceramic Narrative the ‘story’ that a group of ceramics with correlating attributes and shared production processes from the same learning tradition tells about the community of practice who made the ceramic and the relationship to specific technological ceramic practices or traditions in wider Southeast Asia.	1, 7
Chaîne opératoire a method for analysing the operational sequence and social acts involved to reconstruct all technical stages of production showing the dynamic link between stages. See Technology.	1, 4, 5, 6, 7
Community a group of people living in the same place or having a particular characteristic in common, who interact socially and are conditioned by the assumption of physical distance and reconstructed by similarities in material culture.	1, 4
Community of Practice a group of people linked by their shared practices and who deepen their knowledge and expertise by interacting on an ongoing basis. Members define their identity through participation in shared practices.	1, 4, 5, 6, 7, 8
Cultural Pluralism a broad pattern of heterarchy which shows small localised cultures within a wider region with variability in material culture and social practice (see White 1995). See Heterarchy.	1, 4, 7, 8

Earthenware a low-fired ceramic material, usually unglazed, non-vitreous, porous and hand fashioned.	Through-out
Fabric the composition of a fired ceramic based on paste, inclusions and temper, texture, hardness, porosity, fired colour, and surface finish e.g. red-slip. See Paste.	5, 6, 7
Fabric group a group of ceramics with similar fabric comprised by similarity in inclusions, clay matrix and voids.	5, 6, 7
Grog an anthropogenic synthetic inclusion made from pre-fired clay used as temper.	5, 6, 7
Heterarchy a theoretical approach and a system of organisation where the elements of an organisation can be unranked (non-hierarchical) or ranked a number of different ways. Heterarchy supposes cultural diversity in small localised areas and non-centralised social structures (see Onsuwan 2003; Onsuwan Eyre 2010; O'Reilly 2001, 2003; White 1995). See Cultural Pluralism and Hierarchy.	1, 4, 7, 8
Hierarchy a stratified system of organisation that groups elements into ranked classes from high to low and reflects differences in power, prestige, or access to economic resources. The teleological band-tribe-chiefdom-state social typology has been the model for evolving sociocultural complexity. Patterns of hierarchy include ruling elites, burial distinction, settlement hierarchy, and trade networks with wide redistribution. See Heterarchy.	1, 4, 7, 8
Learning networks are where the transmission of knowledge takes place, both vertically and horizontally, from generation to generation, between family members, as well as peer and social groups through structures like apprenticeships.	1, 4, 7,
Learning tradition a practice in material culture that shows technological difference based on difference in practice during the production sequence which can be observed and measured. Within learning traditions there are aspects which are determined by environmental factors and availability, imitable which can be copied or adapted, and embedded which are deeply rooted within wider social practices. Learning traditions are carried out by communities of practice.	1, 4, 7
Nusantao Trading and Communication Network Hypothesis a grand narrative of Southeast Asia envisaged by Solheim (2006) which links Early Metal Age pottery styles from southern Vietnam with the Philippine archipelago through the cultural interaction of a maritime-based trading community. From the Austronesian words 'nusa' – south and 'tao' – people, meaning 'the people of the southern islands'. The Sa Huynh-Kalanay pottery tradition is distributed through this network.	1, 2, 7
Pang-alay a Tagalog term describing the ancient Filipino practice of using pottery as offertory vessels for food and libations placed on the surface of graves during funerary rituals. The offerings are thought to ease the journey of the departed into the afterlife. See Votive Offering.	7

Paste the 'recipe' which comprises a fabric including temper, inclusions and clay matrix. Differs from fabric as it does not include porosity or surface treatment. See fabric.	5, 6
Sa Huynh-Kalanay an Early Metal Age pottery tradition defined by Solheim (1964a, 1964b, 2002) and spread by the cultural interactions of the maritime-based trading community the Nusantara Trading and Communication Network, from southern Vietnam to the Philippine archipelago.	1, 2, 7
Stoneware a high-fired ceramic material, usually vitrified and non-porous, wheel made, frequently glazed.	3, 6, 7
Subtype a category of ceramic group. A subdivision of a type which has similar decoration but may vary in decorative technique, fabric or in form and forming technique. Subtypes are hierarchically nested below types.	5, 6, 7
Temper an organic or inorganic material, usually aplastic, added to clay to improve its working, drying or firing properties.	5, 6, 7
Tradeware a high-fired, non-locally produced traded ceramic. Usually glazed, vitrified, non-porous and wheel made. Can refer to stoneware, porcelain and celadon ceramics. A misnomer term in Southeast Asian archaeology as some stoneware may be locally manufactured rather than traded.	3, 6, 7
Technology the process of making objects that are also products of social practice. The technological process can express world views, sociocultural and personal identities and are products of social relations. See <i>Chaîne Opératoire</i> .	1, 4, 7, 8
Types a category of ceramic group. There is no consistent definition of type in Southeast Asian pottery studies. Solheim (2002: 3) has defined types as a group of closely related ceramics with common paste, temper, general surface colour, finish and decoration. This research defines types as a local variation of a regional style identified by specific correlating attributes incorporating forming, decorating, firing and learning techniques. Types may also have correlating fabrics. All wares will consist of types, but as yet, not all types are wares. Types are hierarchically nested below wares.	5, 6, 7
Votive Offering an object deposited without the intention of recovery or reuse to gain favour with supernatural forces. See <i>Pang-alay</i> .	7
Wares a category of ceramic group. There is no consistent definition of ware in Southeast Asia. It is broadly used as regional descriptions of distinct ceramic groups distributed in Southeast Asia and defined by their exterior visual. This research defines wares to mean ceramics groups related to wider regional styles that have previously been identified, and can be distinguished by its exterior visual, such as fired colour, and used as a higher level of ordering. This is used as a descriptive term without prior assumptions about what these mean in terms of social movement.	5, 6, 7

1. Pottery and the People Problem in Philippine Archaeology

1.1 Introduction

This research uses ceramic analysis to investigate variations in technological practices in the Philippines, and the relationships with pottery traditions previously reported for wider Southeast Asia. Focusing on Ille Cave Site and Rockshelter, and nearby cave sites in northern Palawan, Philippines, this thesis identifies and examines a wide range of variability in the earthenware ceramic assemblage from these sites. It is a means to understand the actions and behaviours of people who used the cave, to contribute to the scant picture of social practices in the lives of people in a certain period in Island Southeast Asia. The ceramics were mostly found within a mortuary context at the site. However, an ongoing problem encountered is the extent to which groups of people can be directly identified and the difficulties of identifying social organisation when this is not easily recoverable in the archaeological record. This research proposes that ceramic technology can be seen as an indicator of different learning traditions and learning networks, suggesting different communities of practice.

Culture historic debates in archaeology have equated ‘pots with people’ (discussed in Chapter 4). In Southeast Asia, ceramics have been fundamental to the study of people (fig. 1.1). It forms a large part of the discourse on population migration, cultural development, social complexity, and burial practices. In particular, there has been a preoccupation in Island Southeast Asia, as well as in the archaeology of the Pacific, to look for a ‘homeland’ and to account for similarities in material culture over wide areas. Earthenware pottery in particular is central to migration theories. It has been used as evidence for the Austronesian language dispersal, as a proxy-indicator for identifying these people (Bellwood 1997, 2005; Bellwood and Dizon 2008; Blust 1976, 1988, 1995; Donohue and Denham 2010; Swete Kelly 2008) and it is also seen as the

antecedent of the pottery from the Lapita cultural complex from the western Pacific Islands (Bellwood and Koon 1989; Hung *et al.* 2011; Sand 1999).

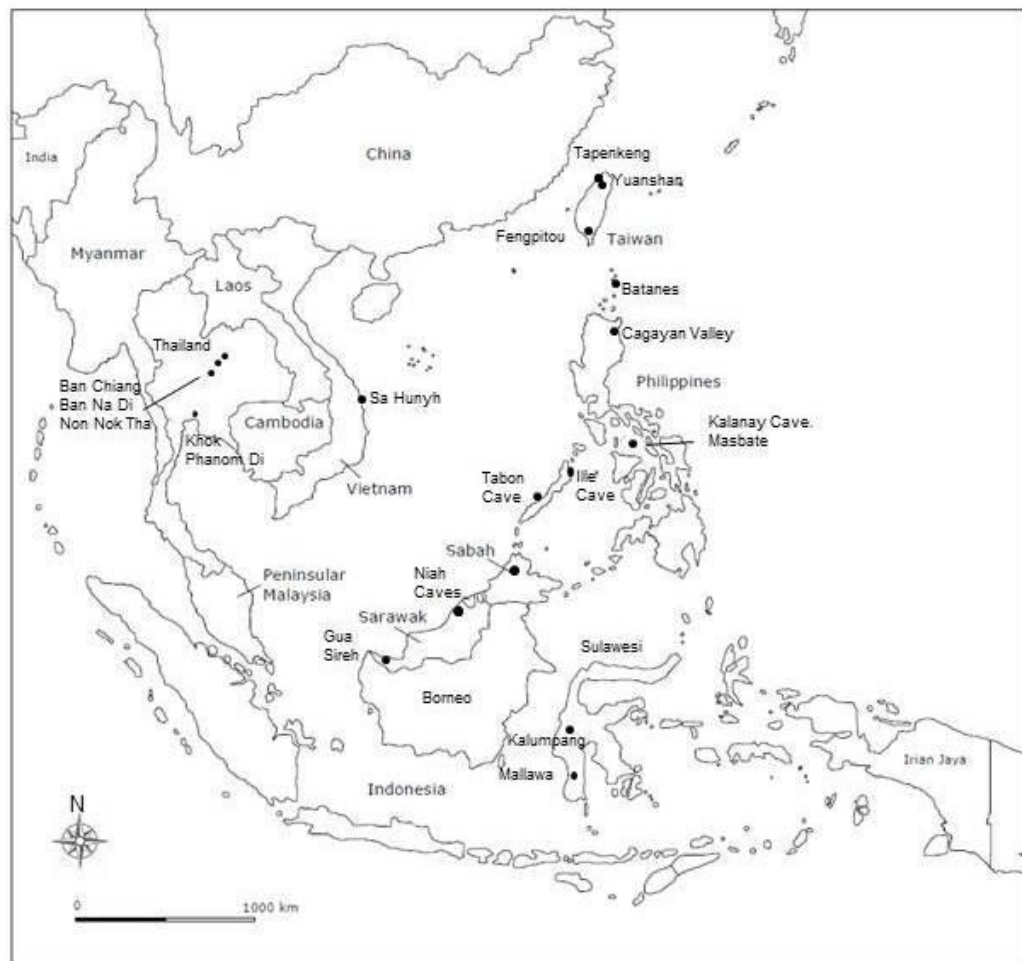


Fig. 1.1 Outline map of Island and Mainland Southeast Asia showing site mentioned in this thesis (image: Y. Balbaligo)

Alternative models for the migration of people through maritime trading and communications networks also use pottery distributions to justify their argument. In particular, the description and identification of the Sa Huynh-Kalanay Pottery Tradition introduced by W. G. Solheim II attempts to link Early Metal Age pottery styles from southern Vietnam with the Philippine archipelago through the cultural interaction of a maritime-based trading community which he terms the 'Nusantao Trading and Communication Network Hypothesis' (Solheim 1959b, 1964b, 1988, 2002, 2006). These large-scale generalising explanations of the past have tried to understand long-term social and cultural processes and developments across all of Southeast Asia.

However, more recently, examinations at smaller levels of interaction are taking place (e.g. Cole 2012; Lloyd-Smith 2009).

The Austronesian vs. Nusantara discussions have focused on large scale grand narratives. However, more recent excavations have revealed unexpected site-to-site variability in material culture which has been found across Southeast Asia, and it has been proposed that these are suggestive of small localised cultures (White 1995: 105). Research in the region is reviewing the existing data, questioning the older models of Southeast Asia's prehistory and examining Southeast Asia in terms of the small-scale, local regions and differences between sites, as well as detailed analyses of archaeological assemblages. One of the wider aims of this research is to reconcile the detailed archaeological data encountered at site level with large-scale regional interpretations of pottery and human behaviour. By examining the ceramic culture excavated at Ille Cave and the earthenware from surveys of caves sites in the Dewil Valley and wider El Nido, where Ille Cave is situated, this thesis accounts for social practices in the local area.

Ille Cave is a multi-period burial and occupation site excavated since 1998 by the National Museum of the Philippines and the University of the Philippines-Archaeological Studies Program. The burials and artefacts supply evidence for the intensive use of Ille Cave from Palaeolithic times and radiocarbon dates have indicated the use of the cave as a burial and habitation site from at least c.11,000 BP ([10,781-10,986 BC] all BP dates converted to BC and standardised with the OxCal program, version 4.2, using curve IntCal13 for the Northern Hemisphere). The site includes evidence of changing subsistence and settlement patterns, as well as a cremation burial dated to between c.9000-9500 cal BP (8233-8269 to 8754-8829 BC), which is the earliest known in the region (Lewis *et al.* 2008). Situated near the village of New Ibajay, within the municipality El Nido, northern Palawan, Ille Cave is located in the Dewil Valley. The valley spans an area of c.15 km and there are approximately 20 caves (figs. 1.3 and 1.4; see Chapter 3). Ille Cave is approximately 200 km over mountainous terrain from the Tabon Caves, southern Palawan. The Tabon Caves were excavated in the 1960s, under the leadership of Robert B. Fox (1918-1985). It has the

earliest recovered evidence of modern human existence in Palawan dating from 47,000 BP ([45,051-45,052 BC] Dizon *et al.* 2002; Dizon 2003; Fox 1970), two lithic industries from c.50,000-9000 BP (48,051-48,052 to 8233-8269 BC) and c.4000 BP ([2476-2567 BC] Fox 1970) and a highly developed jar burial complex containing primary, secondary and multiple burials, dating from the Late Neolithic to the Developed Metal Age. The Tabon assemblages also comprise earthenware and trade goods, such as glass and stone beads and jade ornaments, but at present it is unknown whether people in these areas were in contact with each other.



Fig. 1.2 Examples of significant ceramic types in the Ille earthenware assemblage. All vessels orientated correctly. Image scale = 0-5 cm (images: Y. Balbaligo)

Fig. 1.2a Red-slipped rim with c stamped impressions (not circular stamped). This is the most distinctive type at Ille and will be a focus of this research (Accession number: IV-1998-P-13943)

Fig. 1.2b Grey cord marked paddle impressed sherd (IV-1998-P-13976)

Fig. 1.2c Brown triangular incised rim (IV-1998-P-42100)

Fig. 1.2d Pedestal bowl foot ring, also see fig. 6.32 for range of pedestal bowls (IV-1998-P-43272)

The ceramics excavated at Ille Cave, and those recovered from surface surveys of other caves in the vicinity, comprise a significant range of earthenware (fig. 1.2). While the majority of the sherds are undecorated, there is a wide range of styles and pottery types. Some decorations appear similar to styles of earthenware found in Island Southeast Asia. However, the extent to which they are similar will be investigated. What is distinctive is that earthenware from the Ille assemblage seems to be different in form and style from the earthenware found in the various other cave sites in the Dewil Valley and wider El Nido. Furthermore, the ceramics in the different caves appear distinct from each other. The extent to which the ceramics vary from each other, how they are technologically different and the source of raw materials will be examined, but at this stage, it is clear that the valley shows site-to-site variability in ceramic culture.

This research will focus on the earthenware pottery excavated at Ille Cave from 2004 to 2008 inclusive. Since 2004, under new direction with the University of the Philippines-Archaeological Studies Program and an international collaboration, the project is called the Palawan Island Palaeohistoric Research Project (PIPRP). A new standardised recording system was implemented at the site, therefore, the pottery excavated in these years can be confidently associated with the stratigraphy of the site. The earthenware excavated in 1999-2002 will be considered but will not form part of the main dataset. After 2008, excavations turned to the Dewil Valley and there was considerably less excavations at Ille Cave. Earthenware excavated after 2010 will be considered but will not form part of the main dataset. Due to time and permit constraints, only a macroscopic study of pottery from cave sites in the Dewil Valley will be considered. In addition to earthenware pottery, there are high-fired sherds such as stoneware, celadon and porcelain which will be investigated as imports and may help to date the phases of cave use. While these high-fired ceramics at Ille are considered, detailed examination is outside of the scope of the thesis. However, an assessment of their occurrences on site will be carried out to aid the chronological sequence and will be discussed in terms of provenance.



Fig. 1.3 Ille Cave from the south showing path from the main highway. Ille Cave is c.45 minutes by jeepney from El Nido and a 20-30 minute walk from the main highway. The cave mouth and trenches are located at the base (image: Y. Balbaligo)



Fig. 1.4 View from the top of the Ille tower showing the flat Dewil Valley surrounded by limestone karst outcrops (image: Y. Balbaligo)

1.2 Research aims and objectives

The purpose of this thesis is to use the pottery evidence to analyse the degree of variation in the Ille assemblage to assess if there is an overarching ceramic tradition at Ille Cave, and whether more than one learning tradition is evident indicating different learning networks and thus different communities of practice. There are two main objectives: firstly, to understand ceramic practice at Ille Cave, secondly to consider how the ceramics are part of social relationships outside of the Dewil Valley and beyond. This is done by examining the variability in the Ille earthenware assemblage to identify how differences in ceramic technology may suggest different learning traditions and communities of practice as a way of accessing people. Within these two overarching objectives, the following research questions are asked:

1. How can the range of pottery fabrics, forms and decoration at Ille Cave be characterised and to what extent can distinct techniques be identified?
2. What role did the ceramics play in the habitation and mortuary contexts?
3. Can an analysis of ceramic technologies identify different learning traditions or different communities of practice, and what social processes could account for the ceramic variability at Ille Cave?
4. How can the earthenware ceramics in the Dewil Valley and the El Nido area be compared to the ceramics at Ille Cave?
5. How does the Ille earthenware assemblage fit into prior research on pottery traditions in the Philippines and beyond?

1. How can the range of pottery fabrics, forms and decoration at Ille Cave be characterised and to what extent can distinct techniques be identified?

To determine the range and variation of ceramics at Ille Cave and in the Dewil Valley, this research firstly characterises the earthenware according to standard

archaeological classifications to establish fundamental attributes (see Chapter 5 for methodology). These attributes include form, fabric, decorative style and manufacture techniques. A sample of fabrics, identified from clay composition, inclusions, especially organic and inorganic temper and firing, is examined through macroscopic analysis. Data collection was detailed to assess the degree of variability in the sample. Variation could be grouped into types. By grouping the ceramics into wares and types, it was possible to compare the macroscopic analysis with microscopic petrographic analysis to identify correlating fabric groups. The creation of types contributes towards establishing learning traditions and helps build a typology that can be compared with ceramics previously studied in the region. The extent to which they may be able to be linked to chronology is examined. In terms of manufacturing techniques, the *chaîne opératoire* will be examined to see how the vessels were made and what the technological processes were. This will be broken down by examining the processes for preparing the materials, primary and secondary forming techniques, the surface treatments and the firing process. Within the types, ceramic narratives will be explored; this refers to the 'story' that a group of ceramics with shared attributes and manufacture processes from the same learning tradition tells about the community of practice who made the ceramic and its relationship to specific technological ceramic practices or traditions in wider Southeast Asia.

Style and decoration has been the traditional means of analysis for pottery studies in the Philippines (Bacus 2003, 2004; Solheim 1964a, 2002; Romualdez-Valtos 2009). While decoration will be analysed and examined for similarities and differences in comparison to pottery in wider Southeast Asia to see if any relatedness exists, this research places emphasis on decorative technique as an action by the potter rather than the decoration itself as the symbolic means of group identity. This research will also argue that technology, rather than decoration, is a better indicator for differentiating ceramic traditions from different learning networks (*cf.* Dobres 2000; Lechtman 1977; Lemonnier 1989, 1992, 1993; Stark 1998; Chapter 4). This will be used to recognise communities of practice, which provide a better model for identifying people (Canuto and Yaeger 2000; Lave and Wenger 1991). Overall, the identification of ceramic types will allow comparisons across the assemblage and against other

assemblages. Although this research focuses primarily on the earthenware, high-fired ceramics will be noted and discussed. Once the range and types have been established, this dataset will be used to answer the other research questions.

2. What role did the ceramics play in the habitation and mortuary contexts?

Ille Cave was used as a cemetery, with inhumations and cremations, as well as being used as a habitation site (Archaeological Studies Program [ASP] 2005-2006; Lewis *et al.* 2008; Paz and Ronquillo 2004; Szabó *et al.* 2004). This research will investigate the relationship of the earthenware pottery to the cemetery and its complex burial customs. This research will also examine what is meant by 'habitation' and the role of the earthenware in these contexts. Vessel form, size and shape will be investigated to consider potential function and use.

This question also examines how the ceramics contribute towards establishing site use, although this needs to be considered in relation to site formation processes and chronology. After the ceramics have been characterised and types and range established, a Harris matrix (Harris 1989) showing the sequence of deposition of the site's pottery contexts will be created to show the stratigraphic sequence of events and occurrence of material culture excavated at the site. Mapping the pottery on to the Harris matrix, is used to establish three main elements; the pottery sequence, the phasing of the burials, and site chronology. It will also be used to establish whether relative dates can be identified from archaeological contexts. Despite the extensive disturbance at the site, it is hoped that the Harris matrix will show where pottery occurs in the stratigraphy showing the sequence of ceramic types in chronological order, how the ceramics change over time and space and if there was a change in burial chronology which influences the ceramics. Ceramic types can then be compared to known dates and be assessed against other pottery typologies in the region. The pottery sequence can also be related to the cultural sequence at the site. The phasing of the site is generally understood but still under investigation and revision. The research on the ceramics will further inform the phasing of the site by examining the stratigraphic contexts.

Examination of the spatial distribution of the ceramics at Ille Cave and in the Dewil Valley may help determine local interactions and site-specific traditions and to assess the periodisation of the ceramics. The pottery sequence will be related to the cultural sequence at Ille Cave to see where it corresponds in the wider chronological framework in Southeast Asia. The dates of archaeological periods are problematic and differ across all of Southeast Asia, so although absolute dates are useful in regard to phasing, they can also be problematic, and this will be kept in mind during this part of the research.

3 Can an analysis of ceramic technologies identify different learning traditions or different communities of practice, and what social processes could account for the ceramic variability at Ille Cave?

Theoretical approaches will be used as a framework to discuss how groups of people can be identified in the archaeological record (Chapter 4). Using the dataset created in research question 1, ceramic technologies will be used as a means of identifying learning traditions and communities of practice (*cf.* Dobres 2000; Gosselain 1992, 1998, 1999, 2000; Gosselain and Livingstone Smith 2005; Lave and Wenger 1991; Lemonnier 1989, 1992, 1993) and examining the provenance of the ceramics to understand whether the ceramics are local (*cf.* Quinn 2013). This has implications for the sourcing of raw materials, the site of manufacture and the distribution and deposition of ceramics. This question also addresses what social processes could account for the ceramic variability at Ille Cave and what this can tell us about the people who made the ceramics.

This thesis identifies the variation in the assemblage and argues that the ceramic variability is a product of more than one learning tradition and possibly more than one social group who used the cemetery at Ille Cave. Social groups and how many groups of people used the site cannot be directly identified. Variations in pottery forming techniques, however, can attest to different communities of practice. This thesis presents an approach of how best to discuss groups of people who are difficult to recover in the archaeological record.

4 How can the earthenware ceramics in the Dewil Valley and the El Nido area be compared to the ceramics at Ille Cave?

Following on from research question 3, this question asks wider questions about how social relationships in El Nido could be assessed and recovered through the ceramic and the mortuary record, and what social and ceramic relationships exist in the Dewil Valley. This question assesses the extent to which the ceramics as well as the mortuary practice differs from cave to cave. Similarities between the ceramics at Ille Cave and the caves in the Dewil Valley may point to relationships between groups of people in the Valley and how they interacted. This question also asks what accounts for the range and variation of ceramics found and what factors may explain it.

In Southeast Asia, hierarchical and heterarchical theories have been used to understand and explain social complexity (in Thailand Bayard 1992; Higham 1989; White 1995, 2011; White and Onsuwan Eyre 2011. In the Philippines Barretto-Tesoro 2008; Hutterer 1976, 1977; Hutterer and MacDonald 1982; Junker 1990, 2000; Mijares 2003). Heterarchy theory argues for cultural diversity in small localised areas and non-centralised social structures. This is in contrast with hierarchical models which feature systems such as stratified societies with ruling elites, settlement hierarchy, and redistributive trade networks. This question will evaluate the extent to which hierarchical and heterarchical theories can be used as a means of examining interaction in the Dewil Valley and wider El Nido.

5 How does the Ille earthenware assemblage fit into prior research on pottery traditions in the Philippines?

This research focuses on pottery and ancient practice but it also provides a critique of how pottery has been studied in modern times in Southeast Asia and evaluates how data has been gathered in the past. It aims not just to point to problems with earlier work, but to acknowledge strengths, and provide ways forward that build on earlier classifications. By critically reviewing the pre-existing classifications in the Philippines, this thesis discusses how the Ille earthenware fits into prior research on pottery traditions and classifications. It will focus on the grand narratives relevant to the Philippines, especially the Sa Huynh-Kalanay pottery tradition and the Austronesian

red-slipped pottery horizon, identifying how and why these models are problematic. Previous studies have been based on pottery decoration as an indicator of relationships between cultures. This thesis will critically evaluate models based on decorative style and discuss whether they can usefully be applied to the decorated earthenware pottery at Ille.

Overall, this research aims to discuss the place of the Ille ceramics in the broader regional landscape. It will demonstrate how the ceramic narratives that emerge from the analysis of the Ille earthenware can contribute to the wider picture of ceramic studies, and can advance debates about pottery traditions and wider Southeast Asia, specifically through pottery technology.

1.3 Research issues

This research is challenging on many levels as there are many facets to this study and issues to contend with. The problem of identifying people, social organisation and complexity has been discussed above and will be explored in the context of theoretical frameworks which have not been widely applied to Southeast Asia (see Chapter 4). Addressing these issues in the Philippines is made more difficult because of the relatively fragmentary nature of the archaeological record. In archaeology, pottery has traditionally been used as evidence for dating, distribution such as trade, and function and/or status (Orton *et al.* 1993: 23). These endeavours are made more difficult in relation to the Ille assemblage due to limitations in the nature of the material, site formation processes, and preservation and excavation conditions. However, it is only through acknowledging and assessing these difficulties that the archaeology of the region can be advanced.

The research generated by excavations and surveys are the first to shed light on the Dewil Valley, northern Palawan, but there are many unknowns. One significant gap in knowledge is that no habitation sites have yet been found in the valley and there are no standing monuments or other structures that indicate settlement. Population or community size is unknown. It is not clear whether people were mobile or sedentary.

Furthermore, pottery production sites, workshops or kilns have not been found. Therefore, it is hard to reconstruct a true picture of how people might have lived and subsisted away from the caves. The nature of cave archaeology means that there are environmental, preservation and taphonomical problems common to any cave assemblage (e.g. Anderson 1997; Barker *et al.* 2005; Paz 2005). Within Ille Cave, theurbation and bioturbation on the site may mean the stratigraphy does not provide secure contexts and site formation processes may be difficult to interpret (see Chapter 3 for discussion of the site). While Ille Cave has been excavated continuously since 1998, other caves in the valley have mostly been identified by surface survey with very limited excavations and no petrography has been carried out on the recovered ceramics. Therefore, ceramics collected from the surfaces can only be a starting point for comparison in the local area.

There have been problems in excavation methods. The site was a training excavation and there have been errors in recording which have become apparent when plotting the site's overall Harris matrix. It has taken a few years to identify and correct these mistakes. Furthermore, every year the trenches have been expanded horizontally in space and there have been inconsistencies regarding the use of context numbers and sequential numbers have not been kept. Even after a careful review, and where possible correction, of the site records, poor labelling has also meant that artefacts, including ceramics, were sometimes not recorded with their contexts and this information is now lost (H. Lewis and V. Paz pers. comm. 2012). Systematic archaeology in the Philippines is still developing and its practitioners are learning the lessons from early excavations.

This work is the first full and systematic study of the Ille ceramics, which has meant that gathering empirical data must take place before any analysis and interpretation. Defining the ceramics is an essential part of the investigation. Miller (2007: 3) argues that it is in the process of investing, that what something means, can only be revealed once the full extent of the issues are understood. The post excavation analysis was undertaken away from the author's home institution with limits on time and physical space. There have also been issues with exporting materials from the Philippines for

analysis. To date, there are no comparative datasets in the Philippines, either as a ceramic assemblage or in thin section, with little comparative work done on other assemblages. Any typological work has been descriptive and based on rim forms and surface decorations. Solheim's work has had a direct impact on how pottery has been studied in the Philippines for the last sixty years. While there have been numerous studies on ceramics in terms of decoration and form, and relating ceramics to the movement of people in a culture historical framework, these works do not go beyond description and contain black and white images which are difficult to compare to modern assemblages. Solheim's work has not been updated, no further work was undertaken on the Tabon Pottery Complex and little has been done to interpret the ceramics in the light of more recent developments and new scientific methods. Solheim's theories, especially his Nusantara hypothesis are largely contested (*cf.* Paz 2006: viii) and few contemporary studies on prehistoric Philippine earthenware pottery has meant that developments in ceramic studies have been overtaken by more recent work in other Southeast Asian countries.

There is an absence of well-established structures for the typology, chronology and regional sequence of pottery for the Philippines as one geographic unit. No one archaeological site in Island Southeast Asia has yielded an assemblage to establish a pottery sequence and no groups of sites have a common assemblage to form a pottery horizon. In wider Southeast Asia, there is also a lack of definite answers to basic questions of typology linked to chronology (Miksic 2003; White and Hamilton 2009: 358). There are few open habitation sites and most of the knowledge of people and pottery has come from cave and mortuary sites, and little is known about pottery use, its role and function in burial and domestic contexts.

In Mainland Southeast Asia, Thailand has made the largest advances in archaeology. It has the longest record of continuous excavations and some of the largest ceramic assemblages (e.g. Ban Chiang, Khok Phanom Di). The amounts of ceramics excavated and with the fact that they have good stratigraphic contexts has meant that quantitative work has been successfully carried out and it is progressive in terms of using scientific methods and developing theories (Vincent 1984, 1988, 2000, 2003a,

2003b). In Thailand, much work has been done on establishing a cultural chronology. Cultural phases have been developed for most Thai sites and attempts are being made to calibrate them across the region. However, there has been intense debate and dispute regarding the first appearance of bronze metallurgy which preceded the Iron Age and there are discussions on the dating, technology, production and social organisation that are connected to metallurgy (Higham and Higham 2009; Higham *et al.* 2011; White 1988, 1997, 2008). AMS dating of rice chaff-tempered pottery has also contributed to developing the chronology (Glover 1990; Higham 1996; White 1997, 2008). However, despite the large body of work on dating, these debates have both enriched and inhibited a consensus on a unified Thai chronology.

Establishing an absolute chronology for Island Southeast Asia has always been a problem for a number of reasons. Dizon (1983: 3) attributes this to the paucity of data and the problems with radiocarbon samples in the tropical conditions, for example, soils are often highly acidic. As Spriggs (1989: 604, 2003) advises, radiocarbon dates from the 1950s and 1960s must be treated with caution. Furthermore there have been various anomalies with dates across the region. Chronology has mainly been informed by Solheim's work and excavations at the Tabon Caves (Fox 1970). Solheim has built up a chronology giving the distribution of his pottery complexes in both time and space. Gunn and Graves (1995) also attempt to construct a chronology through seriation based on Guthe's ceramics. Fox's early dates from the earthenware at the Tabon Caves are from Neolithic contexts that date to c.2680-890 BC and so far these have not been contested. Spriggs (1989) has attempted to build a chronology across Island Southeast Asia using radiocarbon dates from various materials, including pottery sequences in the region and from linguistic correlations. The pottery is usually linked to the spread of the Neolithic – biased towards the Austronesia expansion and the Out of Taiwan hypothesis. However, a satisfactory chronology has not been reached for the region.

There are further problems with periodisation in Southeast Asia. The conventional technologically led 'Three Age System' has been adopted in Southeast Asian archaeology but not without problems. The dates of development and transition of periods differs across Island Southeast Asia. However, while absolute dates for sites

are rare, dates are not an indicator of period and for the Metal Age the accepted date is arbitrary. There is no separate 'Bronze Age'. Bellwood (1997: 268) states that "the Early Metal Phase commenced with the introduction of copper-bronze and iron artefacts and their manufacturing technologies presumably together." Furthermore, Bellwood (1997: 268-9) takes 500 BC as an arbitrary starting point, as he does not feel that metal in the Islands can be earlier than this and assumes an arbitrary termination at AD 1000. The Early Metal Phase correlates with the introduction of new technologies and trade items into Island Southeast Asia from the Mainland. It should also be remembered that hunter-gatherers, or 'Neolithic' societies, may co-exist with neighbouring users of metal.

Modified after C.O. Houston 1969 Beyer's Periodization of 1948				National Museum Chronology 1963 Image: Paz 2010				
Characteristics		Horizon		Date	Horizon		Character-istics	After Palawan 1966
Ming, Yuan-South, Sung, Tang-Sung		Porcelain Age		1600 AD	Contact & Trade		Islam appears. Period of contact with the great traditions of Asia	→ Contact & Trade
Jar Burial	Iron Age	Late	Early	900 AD 800 AD	Devel-oped	Iron Age		→ Metal Age
Incised Pottery					Early			
Jade, Greek Beads	Late	IV	Bronze Age	200 AD - 0 -	Chalcolithic		Iron appears. Tools: small quadrangular adzes; Bronze and copper; Iron appears late. Pottery appears	
Stepped Adze		III			500 BC	Late		Neolithic
Transitional Early Nephrite	Neo-lithic	Phase II		800 BC	Early			
		Phase I		1200 BC				
	Middle Neolithic			1750 BC				
Semi-microliths, microliths	Early Neolithic			2250 BC 2680 BC				
Large Implement	Proto-Neolithic			5000 BC				
Hoabhinian	Mesolithic			12000 BC 22000 BC	Mesolithic			Palaeolithic
	Palaeolithic				Palaeolithic			50-60,000 BC

Fig. 1.5 Schematic representation of Philippine archaeological chronology (image: courtesy V. Paz pers. comm. 2010)

In Borneo, earthenware ceramics from Gua Sireh, western Sarawak have been AMS dated to c.4500 years (Bellwood 1997: 237) which has implications for early dates of rice cultivation (see Bellwood *et al.* 1992; Doherty *et al.* 2000; Ipoi and Bellwood 1991). More recently, an ongoing dating programme for the Niah Caves, has allowed researchers to establish more accurate dates for activities and estimated dates for periods (Barker 2013). With the earthenware ceramics, Cole (2012) established a relative chronology and was able to identify social differentiation in different periods. In particular, Cole identified that later Neolithic society (c.800-200 BC) was composed of a single group with a varied, but unified set of mortuary practices whereas in the Early Metal Age (c.AD 800-1200) a single group identity was still evident but with fewer variations. By the Advanced Metal Age (c.AD 1200-1450) there was a change from individual to collective burial. Cole (2012: 192) was then able to reconcile the ceramic chronology to absolute dates provided by radiocarbon determinations at Niah and match this to later trade activities with China. Comparative dating at Niah will help inform the dating for Ille (see Chapter 7).

In the Philippines, dates and periods are similarly contentious. At present based on dates from the Tabon Caves, the Neolithic is dated to 2680-500 BC while the Metal Age dates from 500 BC to AD 900 (see fig. 1.5). In Paz's (pers. comm. 2010) schematic representation of Philippine archaeological chronology, the left column represents Beyer's (1948) chronology. His "wave migration theory" where seafaring Malays brought the Iron Age culture is disputed and unproven by modern archaeological evidence. The National Museum chronology since 1963 on the right is based on archaeological evidence collected from around the Philippines. The grey column on the far right shows the most accepted chronology to date after the excavations in 1966 at the Tabon Caves, southern Palawan. The periods are based on technological change. A Mesolithic period is redundant as the transition from the Palaeolithic to the Neolithic sees agriculture, the development of stone tools and pottery develop at different times in different regions. Similarly copper, iron and bronze appears together so there is no distinct Bronze or Iron Ages. However, some studies make the distinction between the Early Metal Period and the Late Metal Period. New excavations are continuously refining the chronology and adding absolute dates for region.

Archaeologists in the region have started to become more critical about the terminology they use (Paz 2003, 2004b) and there are movements towards reconceptualising what the Neolithic is in Southeast Asia, especially in the Philippines (Rice *et al.* 2009; Rice and Hernandez 2010). Problems of periodisation at Ille will be discussed.

The Ille earthenware ceramics, along with the earthenware collected from the Dewil Valley and surrounding El Nido, form one of the largest assemblages excavated in Northern Palawan and were previously unstudied. Despite the main focus being on a single site, the stratigraphic difficulties and lack of comparative data, it is vital to continue building upon a subject that has not been revised since the 1970s by using modern and scientific methods. The archaeology of Island Southeast Asia is underdeveloped in comparison to other regions but can compete on a global stage with other world civilisation. It is one of the last frontiers in archaeology and despite the deficiencies, progress must be made. The examination of a large dataset from an understudied region is appropriate as a PhD subject. It lays the foundation for ceramic studies in northern Palawan (*cf.* the Tabon Caves in southern Palawan) and will be built upon in coming years at the University of the Philippines-Archaeological Studies Program.

1.4 Original contribution of research

Excavations at Ille Cave and within the Dewil Valley are ongoing. Ille Cave is an important site for the understanding of archaeology in the region. The site is the best dated cave site in the Philippines with more than 30 radiocarbon dates in the lower layers (Lewis *et al.* 2008; Piper *et al.* 2011: 143; Szabó *et al.* 2004) with the earliest dates from c.14,000 to c.11,500 cal BP ([14,868-15,215 to 11,334-11,450 BC] Lewis *et al.* 2008). In the wider region, these dates relate to broader Pleistocene-Holocene transitions. This aspect is currently under investigation by the Palawan Island Palaeohistoric Research Project. The earliest dates on modern human remains in Palawan come from the Tabon Caves in south Palawan c.47,000-16,000 BP ([45,051-45,052 to 17,233-17,521 BC] Dizon *et al.* 2002; Dizon 2003; Fox 1970). Furthermore,

the geology of the Ille limestone karst tower is older than the periods of occupation and maybe even older than the human population. Therefore, it is possible that a deeply stratified site in the region could produce significant cultural materials.

The site has the earliest evidence of a cremation cemetery in Island Southeast Asia (Lewis *et al.* 2008). Cremation is one of the many mortuary practices at Ille Cave and a practice that is not continued in later times. Thus, there is a long history of complex mortuary practices at Ille and potentially in the Dewil Valley that conveys beliefs and 'cult-of-the-dead' practices in ancient Philippines. Although intangible issues of belief and cosmology are beyond the scope of this thesis, Ille Cave could contribute to the understanding of changing beliefs and burial practices in the region (*cf.* Paz 2012).

Palawan is geographically strategic. It is the most westward island of the Philippines and bounded by Borneo and Indonesia to the west and south and Mainland China and Taiwan to the north. Palawan is located in an area of trade networks with China during the Contact Age since the tenth century (Southeast Asian Ceramics Society 1979; Valdes *et al.* 1992). However, there is also the potential for earlier intra-trade routes within the islands (*cf.* Cayron 2012). Earlier than this, Palawan is located in the area of the one proposed early human migration route between the Southeast Asian Mainland and the Pacific which could provide further information for evidence of movement and early occupation.

In terms of ceramics, currently, there is little standardisation in the approach to ceramic classification in Southeast Asia. This is partly due to differences in the type of pottery, depositional practices, environmental conditions and ease of access to archaeological sites. This research advocates the consistent and replicable recording of pottery, taking existing techniques and applying it to a new dataset to improve research and analysis. In particular, this research uses guidelines established by the Prehistoric Ceramics Research Group (PCRG 1995, 2010) developed for British prehistoric hand-made, low-fired, non-industrial pottery and is applicable to prehistoric Southeast Asian earthenware. By building on previous work and creating a ceramic dataset, this has the potential to link datasets and set a standard for ceramics

studies going forward. Relatively little petrography has been carried out on ceramics in the Philippines (Arriola 2010; Cayron 2012; Dasallas forthcoming; De Leon 2008; Mijares 2005; Yankowski 2005, 2008). This research petrographically analyses the largest sample of ceramics so far in the Philippines thus contributing a component from the Philippines to the petrographic database that is beginning to develop for earthenware in Southeast Asia. By quantifying ceramic attributes, these basic units of comparison can be used for inter-site comparisons, and may contribute towards a regional framework for analysis.

Essentially, this research has the potential to connect ceramics from the Philippines to the rest of Southeast Asia. The use and development of archaeological theory in Southeast Asian archaeology is less pronounced than in Anglo-American archaeology. Although archaeologists must be cautious when applying theory from one region to another, there are advantages to a shared intellectual framework for evaluating and interpreting archaeological data. By using current theories of learning traditions, social and communities of practice, heterarchy and ceramic technology, this work hopes to provide a more nuanced vocabulary for discussing social structures and relationships where other material evidence is more limited. This research is critical of overarching narrative models of cultural change in Island Southeast Asia. But, it is hoped that these theories provide a new way of thinking and discussing Southeast Asia societies that is appropriate to the material and dataset that are available.

The thesis helps to integrate the archaeology of Ille Cave and the Dewil Valley within wider archaeological research by critically evaluating the stratigraphic record, pottery use and human action in the region. The Harris matrix can be used by other researchers and shows the phasing of the burials and the relationship of the pottery in these phases and beyond. This research seeks to account for the presence of pottery, its uses and social role to help construct a picture of people and their social practices in the cave, elucidating ritual activity and how peoples' identities were partly expressed in their material culture.

This research cannot on its own resolve wider problems in the region. Without an overarching pottery sequence or regional chronology, Ille Cave and its ceramic assemblage are not enough to form a complete ceramic typology linked to chronology. The problem of chronology may not be resolved until an appropriate site is found. However, typology and chronological ordering must be attempted whilst providing a critique of past works. This research will contribute to current discussions by putting Ille in its regional context.

1.5 Structure of the thesis

This chapter has provided an overview of the problems to be addressed. Chapter 2 will examine these issues further and put this research into context. It starts with a critical analysis of previous approaches to pottery studies in the Philippines, focusing on the work of Solheim and his proposal for the Sa Huynh-Kalanay Pottery Tradition. It then examines the role of pottery in the wider interpretation of Southeast Asian archaeology in Island Southeast Asia, its impact on Pacific archaeology and in Mainland Southeast Asia.

Chapter 3 introduces the archaeology of Ille Cave situated in the Dewil Valley and the problems with the archaeology of caves and tropical environments. It outlines the history and aims of the excavations at the cave and the surveys in the valley. It discusses the site formation process of the cave, features of the site including the inhumation and cremation cemetery, shell middens and possible layers for habitation. It will describe the material culture and subsistence basis. This chapter will also discuss previous excavations and surveys on the island of Palawan and its relationship with Ille Cave, and concludes with a survey of Island Southeast Asia cave sites in close proximity to Ille Cave with significant pottery assemblages to give further geographical context for the research.

Chapter 4 provides the theoretical approaches to social complexity which underpins this research. It evaluates various approaches used in the study of prehistoric societies. It is critical of social evolutionary approaches which favoured hierarchical structuring

of societies in early archaeological discourse and its subsequent application to the archaeology of the Pacific Islands and Thailand. In antithesis, the chapter then examines the heterarchical approach that has been developed for Thailand and its potential application to the understanding of communities who inhabited the Dewil Valley. This chapter concludes by examining the importance and role of technology as a means of identifying learning traditions and subsequently communities of practice.

Chapter 5 details the suite of analytical techniques for the examination of the ceramics to establish the range and variation of the earthenware. The chapter starts by considering approaches to ceramic quantification and sampling. Macroscopic analysis for standard ceramic classifications and correlating attributes are given based on guidelines from the Prehistoric Ceramics Research Group (PCRG 1995, 2010) including fabric, form, decoration and manufacture which will form the basis of ceramic wares and type. Definitions of wares and type are given and discussed in the context of Southeast Asian ceramics. Other analytical techniques such as thin sectioning for petrography analysis, SEM imaging and AMS dating of organic materials will be discussed. This will then be related to theories discussed in Chapter 4 to develop a method for identifying learning traditions through a comparison of pottery forming techniques. Earthenware ceramics outside of the years of study, earthenware from the Dewil Valley and the high-fired ceramics will be macroscopically assessed and discussed. Finally, this chapter discusses how the site Harris matrix was constructed and how the ceramics will be assessed against the stratigraphy to contribute to the understanding of site use and chronology. Overall, this chapter analyses the importance of each stage, purpose and how it relates to the research objectives.

Chapter 6 presents the results and interpretation of the ceramic analysis. Each attribute which contributes towards the formation of ceramic wares and types will be discussed in turn, as will the results of the petrographic analysis, SEM imaging and AMS dating of the organic materials in the sherds. These results are used to identify a number of distinct learning traditions. The Ille earthenware will be compared to the earthenware from surveys in the Dewil Valley and El Nido. The Harris matrix will show

the horizontal patterning which will determine the chronological sequence of the ceramics and site.

Based on the results and the theoretical approaches to social organisation introduced in Chapter 4, Chapter 7 responds to the research questions posed in this chapter. It builds a case for social complexity and social practices. It will discuss what technological processes are evident and choices that exist in the pottery process. It will explain the role of the ceramics in the burial rituals and habitation contexts at the site. It will give an account for the variation in the assemblage and diversity of ceramics in the Dewil Valley and the relationships between the sites. By comparing the Ille earthenware types to other earthenware in Island Southeast Asia it will show how it fits into other assemblages and the wider cultural links to the site. Chapter 8 presents the conclusion of this research and how it meets the main research objectives within the context of broader regional questions. This chapter closes with this study's implications and recommendations for further research.

Appendix A contains the ceramic analysis of the comparative ceramics from Ille Cave including the earthenware excavated outside of the years of study (1998 to 2002 and 2009 to 2010), the ceramics from the top of the Ille tower and the high-fired stoneware, celadon and porcelain. This analysis examines the consistency of the ceramics across all years. The surface sherds at Ille were examined to draw comparison with surface sherds at other sites in the Dewil Valley and El Nido. As the other sites were not excavated, this allows a parity of comparison between surface finds. The high-fired ceramics were examined to understand their depositional contexts and assess the presence of identifiable trade/exchange items which may contribute to a better understanding of how the site fitted into the regional distribution systems

Appendix B presents the ceramic analysis of the comparative earthenware ceramics from the surface collections from six sites in the Dewil Valley, two sites in the wider El Nido area and three sites from islands off the west coast of El Nido. It examines the extent to which ceramics were technologically comparable to assess whether any shared technology indicated shared learning traditions with Ille and beyond.

Appendix C contains the complete petrography report of the Ille earthenware undertaken for the results chapter. The report presents the full textural analysis, characterisation and fabric groupings undertaken by the author, with photomicrographs of the thin sections.

Appendix D contains the rice temper report undertaken for the results chapter. The report discusses the components of rice plant *Oryza sativa* to enable comparison to the organic components in the earthenware sherds. The report presents the results of the microscopy analysis by stereomicroscope and Scanning Electron Microscopy (SEM); and thin section petrography undertaken by the author, and the results of dating by Accelerator Mass Spectrometry (AMS) and Optically Stimulated Luminescence (OSL) carried out by the Oxford Radiocarbon Accelerator Unit (ORAU), University of Oxford.

Appendix E presents the Harris matrices with contexts of the East and West Mouth trenches at Ille Cave created by the author and based on the overall site Harris matrix. The appendix presents the analysis of the stratigraphy by phasing to demonstrate sequence and ceramic association.

Appendix F provides the context registers of the East and West mouth trenches as featured in the Harris matrix and compiled by the author. The archive contains a brief description of features in a context, depths and dates, burials, material culture, quantity of ceramics and any other significant information which contributes to the interpretation of the context.

2. Approaches to Ceramic Studies in the Philippines and Southeast Asia

This chapter provides a critical analysis of approaches to ceramic studies in the Philippines, focusing on the work of Solheim and his proposal for the dispersal of earthenware ceramics. This chapter then discusses pottery associated with the Austronesian expansion, ceramics from the Philippines, other sites in Island Southeast Asia. Ceramics from the Pacific, especially the Lapita Cultural Complex, and Thailand are considered to show how research agendas different to those of Island Southeast Asia have developed. This chapter discusses the ways in which pottery has been studied, the issues that pottery has been used to address, and the methodologies for analysing ceramics while critiquing that which is missing and inadequate in these studies. This review does not attempt to be exhaustive but highlights important sites and examples that contribute to the wider understanding of context for interpreting the ceramics at Ille. All dates in this chapter are written as published. Where the BP date occurs, this is converted to BC and standardised with the OxCal program, version 4.2, using curve IntCal13 for the Northern Hemisphere.

2.1 Ceramics in Island Southeast Asia

2.1.1 Developments in the Philippines

The most influential, yet problematic study, on pottery in the Philippines was carried out by Solheim in the 1950s. Solheim's research originally examined H. Otley Beyer's (1883-1966) hypothesis that Iron Age culture was brought to the Philippines from the south with the Malay people; who Beyer considered the ancestors of the majority of the present day Filipino population. Beyer's pioneering investigation into the archaeology of the Philippines began in 1926 (Beyer 1947, 1948; Sullivan 1956: 68-70). His excavations in Novaliches, northeast Manila, revealed an ancient burial ground which contained a great quantity of what Beyer called 'Iron Age pottery' below a

deposit of fourteenth century Chinese celadon, with a nearby deposit containing Neolithic stone axes. Beyer subscribed to Heine-Geldern's (1932) grand theory of diffusion, and in line with culture historians, followed the technology based Three-Age System. Beyer (1947, 1948; Beyer and De Veyra 1947) claimed that the Philippine archipelago was inhabited by means of several waves of migrations coming from the Asiatic mainland with each wave carrying technological changes. At the time, this argument was based on minute typological variation in adzes which were compared to the then scant assemblages in Mainland Southeast Asia. Beyer and De Veyra (1947: 1) hypothesised that the last of the prehistoric migrations by the Malays (c.300 and 200 BC) brought four new industries; pottery; smelting and forging of metal tools and weapons; hand loom cloth weaving; and glass manufacture. Beyer thought that these crafts originated in India and spread to Indo-China and southern Malaysia, finally reaching the Philippines by way of Borneo and Celebes (Beyer 1947: 234; Beyer and De Veyra 1947).

Beyer (1948: 21) states that there was an Iron Age pottery industry but he did not recognise Neolithic pottery. It was his opinion that no pottery or knowledge of pottery making spread with the Early Neolithic oval-adze culture passing through the Philippines. Although he acknowledges there was a pottery making industry of turned and decorated pottery, there were no other discussions of technology or decoration and no evidence of early wheel turned pottery in prehistoric Philippines. Pottery was not used to inform chronology as all of his dates were arbitrarily chosen.

Beyer used the pottery as specious evidence for migration. His works were observations and general descriptions with no real analysis of ceramic attributes, little quantification, and no information about archaeological contexts. Beyer (1947, 1948) published lists of finds, without meaningful descriptions and few images. Beyer's viewpoints were situated closely within the culture historical concern of migration to explain culture change and spread. It was a preoccupation of culture historians to use migration to trace named ethnic groups. This can be seen in Beyer's assumption of the Malay Race. However, much of his arguments were tenuous and incorrect due to the lack of evidence. Pottery certainly predated the Iron Age. Beyer's work has influenced

the study of Philippine prehistory as well as how Philippine history is told. The term 'Malay Race' for the migration of people during the Iron Age is an erroneous misnomer. Relating people of the Philippines to the Malay races is unsubstantiated and has been contested. However, this view has pervaded modern history books and is still taught in schools (*cf.* Agoncillo 1990; Palma 1949).

2.1.2 Solheim's pottery complexes

Solheim used pottery as a key component to examine and refute Beyer's hypothesis. Solheim was the first to create a typology to systematically examine pottery in the Philippines and to enable handling of large sets of data. Solheim's research was based on his excavations at Kalanay Cave, central Philippines (1951-1953) and on the Guthe Collection. The Guthe Collection, collected by Carl E. Guthe (1893-1974) from 1922 to 1925, consisted of unprovenanced ceramics that had no stratigraphic information (Guthe 1927, 1935). Solheim (1964a) sought mainly to understand the chronological and cultural relationships amongst the people who made the different pottery groups; the origins of the pottery groups and the associated artefacts, and how they arrived in the Philippines. Like Beyer, Solheim's scholarly roots were culture history and focused on migration theories. This can be seen in much of his work. Solheim's methodologies are further critiqued in Chapter 5.

Solheim's exploration of Kalanay Cave, a burial site in Masbate, central Philippines, led him to typologise the ceramics to organise them as no stratigraphic information was available (Solheim 1959a, 1964a, 1964b, 2002: 3). From this site he distinguished two groups of pottery types named Kalanay and Bagupantao after their respective areas. The Bagupantao pottery complex was not pursued. However, Kalanay Cave became the type site for the Kalanay pottery complex. Solheim (1964a, 2002: 3) used decoration to classify the ceramics as "methods of decoration can be determined with relative ease on small potsherds as well as on whole vessels making quick field identification possible". Solheim found variety in the decorations showing changes over time and identified outside influence on a major decorative style. The diagnostic designs included scallop decorations in relief, curvilinear scrolls with alternating triangles, and paired diagonals and borders (see fig. 2.1). Vessel forms of the Kalanay

pottery complex were found in great variety and divided into 16 groups. There were many distinct forms but no one clearly distinguishable form was present in all sites.



Fig. 2.1 Range of decorations from the Kalanay pottery complex which became the basis of identifying the Sa Huynh-Kalanay pottery tradition (image: Solheim 2002: 11)

Without microscopic inspection, Solheim (1964a: 22) was confident he could identify two varieties of fabric, however, he does not categorically state what they are but says: “one [being] firmer and more homogenous than the other”. However, since his original study, no microscopic investigations of the paste have been carried out, therefore, it is difficult to verify this claim. There were no other descriptions of paste, and images were published in black and white. From Solheim’s studies it is unclear

whether sherds are red-slipped (*cf.* Solheim 2006: 107). There are some images of sherds which have circular impressed decorations which have similarities to red-slipped wares in other assemblages (fig. 2.2a). Like Beyer, Solheim speculates that the slow wheel was used (Solheim 1957: 165, 1964a). But it is highly unlikely as all pre-Metal Age pottery were handmade (*cf.* Fox 1970: 77).

2.1.3 Emergence of the Sa Huynh-Kalanay pottery complex

Solheim's PhD thesis was originally published in 1964 and revised in 2002 acknowledging more excavations and greater knowledge of external relationships (Solheim 2002: 173). He had previously stated that the pottery complex was the largest unit of classification used in his classification, and that if the same artefacts were associated with a pottery complex in a number of sites, then the pottery complex and the artefacts define an archaeological culture (Solheim 1964a: 192-206, 2002: 3-4, 173). However, Solheim (2002: 173) no longer held this proposition stating that due to the wide distribution of the pottery and the timescale, Kalanay could not be the pottery of one widely spread culture. Solheim then related Kalanay pottery to pottery with similar traits found at Sa Huynh, central Vietnam (Solheim 1959b, 1959c), thus he renamed it the 'Sa Huynh-Kalanay pottery tradition' when ambitiously referring to all of the Philippines and/or Southeast Asia (Solheim 1964b; 2002: 179).

The site at Sa Huynh, Quang Ngai Province, central Vietnam was first reported in 1909 and excavated in the 1920s, 1930s and from the 1990s to the present day (Colani 1938; Janse 1941; Parmentier 1924; Reinecke 1996; Reinecke *et al.* 2002). The coastal site comprised hundreds of groups of jar burials containing glass, stone and carnelian beads, earrings and ornaments, bronze and iron artefacts, small pottery vessels and human remains. It is thought that Sa Huynh culture occupied the south-central coast of Vietnam between c.500 BC and AD 100 (Higham 2002; Southworth 2004). Sa Huynh pottery was decorated with cord marking, incised geometric shapes, carved paddle impressions but rarely painted. Solheim (1959b: 103, also 1964b) discussed the methods of decoration and highlights the most common and similar attributes to the Kalanay pottery complex as

Elements of triangles, rectangular meanders, chevrons, or narrow, rectangular, vertical bands... arranged in horizontal bands above the maximum diameter of vessels with constricted mouths or on the lip and the ring-foot of shallow bowls (Solheim 1959b: 103).

Forms included tall cylindrical plain or cord marked burial jars with round bottoms and trunconic lids, carinated and shallow bowls, and footed vessels. Solheim (2003a: 16) hypothesised that the Sa Huynh-Kalanay pottery tradition was communicated from the Vietnamese coast and from there to Palawan and gradually eastward into the Visayan Islands of central Philippines. He attributes this to the Nusantara Maritime Trading and Communication Network (NMTCN) a loosely defined 'idea' of a maritime Southeast Asian cultural ancestry (Solheim 1984-1985, 1988, 1996, 2006: 58-59). This is discussed further below.

2.1.4 Solheim's other pottery complexes

Solheim established the Bau Pottery Complex, named prematurely after the carved paddle impressed pottery at Gua Bungoh near Bau, Sarawak which he considered the type site. The pottery of the Bau pottery complex had much less variation in form and decoration than those of the Kalanay pottery complex. This pottery has been found at many scattered sites in Island and littoral Mainland Southeast Asia where the presence of "Malay sailors" has been suggested (Solheim 2003b: 25-6). Similar to the change in name of the Kalanay Pottery Complex, Solheim (2002: 173) sought to change the Bau Pottery complex to the Bau-Malay Pottery Tradition. However, he also recommended the name be changed to the Santubong-Malay pottery tradition or the Tanjong Kubor-Malay pottery tradition after the area in Sarawak where many sites with this pottery had been found (Solheim 2003b: 26).

Solheim also devised two other distinct pottery complexes based on excavated assemblages and the Guthe collections; the Novaliches pottery complex and the Loboc pottery complex. The majority of the Novaliches pottery is clearly distinguishable from Kalanay pottery and Bau pottery. The diagnostic form from Novaliches is a shallow bowl with a high ring-foot. The bowls are plain and the feet are highly decorated with several bands of decoration running around the foot or triangles cut out and they are

extremely well polished (Solheim 2002: 13). There are very few examples classified beyond Solheim's initial excavations. However, it seems that the Novaliches pottery complex is not the only type of pottery with cut outs on ring feet. They are also found at Bagupantao, but whether there is a relationship between the two is never discussed. Solheim (2002: 9) considers the Loboc pottery complex a "minor group" comprised of two distinct vessels possibly local copies of Spanish vessels used in the early Spanish Period in the Philippines.

2.1.5 Critiquing Solheim

Solheim is duly lauded as the pioneer of pottery studies in the Philippines (Paz 2004a) and brought attention to the ceramic tradition of the Philippines. He was the first to attempt a systematic study and create a typology. He also challenged Beyer's hypothesis that an Iron Age culture was brought to the Philippines from the south with the Malays. Although it is important to remember that Solheim's work was the first of its kind and a product of its time, there are problems with his methodology and approach which have had an impact on later work in the area. Solheim's method of analysis was primarily based on observations about decoration and form. However, a majority of the pottery sherds from the sites were plain and could not be categorised according to Solheim's typology. For vessels that were decorated, the full extent of the decorations and variations of form were not given and images are lacking. For example, from the Guthe Collection, there are only a few images of vessels and sherds. While he provides some descriptions, they are inadequate; few in number and there are no corresponding pictures of the vessels. Throughout his 2002 reissue, there are no scales in most of the pictures and illustrations, the plates section (not unexpectedly) contains the special and unique finds which are not always typical of an assemblage and the plate descriptions are unfortunately sparse, so that it is impossible and frustrating for modern researchers to reconstruct the pottery types and compare them to past pottery assemblages and newly excavated assemblages. It is understandable that a full catalogue could not be published, however, in other publications he reuses the same images (*cf.* Solheim 1957, 1959a) and gives the same arguments without further illustration. He does not adequately discuss sizes of vessel or vessel thickness. He provides a limited description of fabric and temper, but

manufacturing techniques are not explored fully. There are also problems with his category of surface treatments where it is difficult to determine slips and other treatments.

Solheim's rebuttal, after the fact, is that he did not necessarily provide a method of analysis. Solheim (2003b: 28) paraphrasing Junker (n.d.) states that his purpose in developing the pottery typology was that it was not meant to be used for the "understanding of the nature and functioning of prehistoric cultural systems" but to "describe a considerable quantity of sherds resulting from the surface collections". He also acknowledges that "no one typology serves all purposes and one should make or use a typology that fits the purpose for it was meant" (Solheim 2003b: 28). Solheim further states:

In my specific uses of typology, I feel I served my purpose of culture history archaeology and were not meant for an understanding of the organization of past cultural systems in Southeast Asia and processes involved in their transformation over time (Solheim 2003b: 29).

However, he did not develop further typologies and ceramic analyses were not taken up with the same fervour by subsequent scholars until the establishment of a dedicated archaeology programme at the University of the Philippines in 1995. Therefore, pottery studies did not grow in comparison to other Southeast Asian countries.

Solheim continuously revised his pottery complexes, but this was not without problems. Solheim attempted to consolidate all the pottery that Guthe collected into his four pottery complexes. It is then with good reason to be sceptical of whether his original categorisations of pottery into pottery complexes are accurate, meaningful, and stand the test of time. In Solheim's original 1964a publication (also in Solheim 2002: 116-117) he classified Site C67 Lagen Island, Bacuit Bay, Palawan (in the same region as Ille Cave) from the Guthe Collection as being of the Bau pottery complex. However, Solheim (2002: 196-7) then makes a "major correction" to this and states the

site should be re-classified as a Kalanay pottery complex site. Solheim (2002: 196) states that

This pottery was classified in 1956. At that time it was believed that carved paddle decoration was found only with pottery of the Bau complex. As two of the vessels from Site C67 had carved or bound paddle impressions the site was classified with the Bau complex sites, though it was noted that there was definite non-Bau pottery present and that there were indications of contact with the Kalanay pottery complex.

Thus, Solheim (2002: 6-7) adds “impressed: carved paddle” and “impressed: bound paddle” to his inventory.

Solheim (2003a: 17) acknowledges criticisms of this work where “there has been some confusion as to my use of the term ‘pottery tradition’ in Southeast Asia” and a lack of take up on this term in wider Southeast Asia “I feel that part of the reason for my hypothesis why the Sa Huynh-Kalanay and the Bau-Malay Pottery Traditions are not more widely used, argued or tested is that their use and purpose have not been widely understood”. Bellwood too finds fault with his work based on the wide generalising nature of his work. On discussing the ambiguousness of Solheim’s position on carved paddle impressions, Bellwood (1988: 251) says “it is interesting to note that the carved paddle impression which Solheim regards as the hallmark of the ‘Bau-Malay’ tradition occurs throughout the Madai Baturong sequence [Sabah] in combinations with pottery which would fit squarely within Solheim’s Kalanay tradition. For this reason I find myself unable to adopt the use of the broad ranging style terms Bau-Malay or Kalanay...”.

Solheim has also tried to subsume all pottery types to fit into Sa Huynh-Kalanay to demonstrate the culture spread into a large geographic area spanning Thailand to the north and inland, to Indonesia in the south. While it was an innovative approach to bring together the traits from coastal Vietnam and insular Philippines to demonstrate a level of relatedness, it implies a unity between the cultures which may not necessarily have existed. It is an etic modern social construct which unsatisfactorily aggregates all pottery in Southeast Asia to a homogenous pottery culture. It does not allow for

diversity in culture or celebrate differences in culture, geography, and environment. It does not take into account different causes, or seek out why there might be difference, over large distances but more importantly in an island culture, the variations in such small areas. In Solheim's model there is no room for flexibility, all pottery is Sa Huynh-Kalanay. However, even archaeologists working in Vietnam acknowledge that not every attribute they think is a characteristic can be firm evidence for existence of a pottery tradition. Reinecke *et al.* (2002: 218) advised caution as not every cord impressed pottery sherd in central Vietnam was proof of Sa Huynh culture site, and not every jar burial can be attributed to this culture. In the same way, this research asserts that not every sherd with a triangle or incised lines on it can be Sa Huynh-Kalanay. Solheim pioneered pottery studies for the Philippines which also impacted on Southeast Asia, however, although his peers were sceptical of his concepts, it has been uncritically perpetuated (e.g. Fox and Evangelista 1958), not updated and remains largely unchallenged (*cf.* Belmonte 1996; Bulbeck 2006; Flavel 2006). Though it is evident that there are relationships between pottery types in Southeast Asia, the incorporation of all variations of pottery forms and decorations within such large overarching 'traditions' in Southeast Asia does not facilitate research into temporal change or distribution studies.

2.1.6 The Nusantara and the Austronesian Hypotheses

The Nusantara hypothesis and the Austronesian Dispersal Model are the two large scale grand narratives of human movement in the Neolithic which have influenced discourse in Southeast Asia. Solheim's work in the Philippines laid the foundation for his hypothesis on the movement of people around Southeast Asia. The notion of migration is replaced by a focus on maritime communication. He attributes this to the Nusantara, a term coined by Solheim from the Austronesian words 'nusa' – south and 'tao' – people, meaning 'the people of the southern islands', rather than a language family (Solheim 1975, 2006). Solheim (2003a: 16) hypothesised that the Sa Huynh-Kalanay pottery tradition was communicated from the Vietnamese coast, and from there to Palawan and gradually eastward into the Visayan Islands of central Philippines. Furthermore

The development and evolution of the Sa Huynh-Kalanay pottery tradition did not originate in one site or within one culture but originated more or less simultaneously over a wide area (c.2000 BC). It developed through a sharing of motifs and methods of decoration and elements of form that we know from third millennium BC sites along the coasts of Vietnam, Hong Kong, Quemoy, Taiwan to the Cagayan Valley (Solheim 2002: 182-183).

The notion of a Sa Huynh-Kalanay pottery tradition is problematic in that it assumes all pottery are from the same tradition without taking into account diversity of culture, time, and space. However, the NMTCN hypothesis has not become widely accepted and remains a collection of observations that has never been properly tested beyond Flavel (2006) and Bulbeck (2006), whose statistical testing of Solheim's hypothesis found that motifs were linked and that assemblages separated by distance displayed a greater number of shared characteristics than neighbouring assemblages (also Belmonte 1996).

It is the Austronesian Dispersal Model or the 'Out of Taiwan' hypothesis, championed by Bellwood (1978, 1997, 2005) that has dominated archaeological debate in Island Southeast Asia regarding movements of Austronesian speaking peoples based on languages which shared a common linguistic ancestor (Blust 1976, 1988, 1995; Dahl 1973; Dyen 1971; Meacham 1984-1985). The homeland of the Austronesian languages has been hypothesised as Taiwan from which people spread southwards from c.4000 BP ([2476-2567 BC] Bellwood 1984-85; Bellwood 1991; Bellwood and Dizon 2008). The examination of ceramics is often correlated to the movement and development of people in Southeast Asian prehistory. Earthenware pottery especially is linked to the big themes of the region. It is a central component of the 'Neolithic Package' along with agriculture and polished stone tools; it has been used as evidence for models of the Austronesian language dispersal; it has become a proxy-indicator for identifying these people; and it is also seen as the antecedents of the Lapita culture ceramics in the western Pacific Islands (Bellwood and Koon 1989). It has been hypothesised that pottery was introduced by the Austronesians along with their introduction of an agricultural economy as part of the Neolithic migration (Bellwood 1997, 2005; Donohue and Denham 2010). Thus there is an assumed link between the presence of cord marked and red-slipped pottery in an assemblage and the presence of

Austronesian language speakers. Red ware and red-slipped earthenware pottery are considered one of the oldest types of pottery found in Southeast Asia along with cord marked and incised pottery.

While Spirit Cave, Thailand has the earliest date for cord marked pottery c.7500 BP ([6378-6421 BC] Gorman 1972; *cf.* 3000 BP [1215-1263 BC], Lampert *et al.* 2003), carved and cord bound paddles were also found in the Pacific including north Solomon Islands and Fiji (Solheim 1952). In Island Southeast Asia, early cord marked pottery has been found at excavations from Fengpitou, southern Taiwan and Tapengkeng, northern Taiwan from c.4300 BC (Chang 1964, 1969; Solheim 2006: 102) while nearby the Yuanshan culture from 2500 BC has red-slipped vessels with circle stamps (fig. 2.2b) and there is fine red ware from Fengpitou in the south dating to c.2400-1900 BC (Chang 1969). In Island Southeast Asia cord marked pottery is also present (e.g. Bellwood 1984-85; Bellwood *et al.* 1992: 163; Datan and Bellwood 1991: 394, 1993: 100). The red-slipped circle stamped pottery, often with white infilling, has become significant as it links Taiwan with northern Philippines assemblages. It is found in the Batanes Islands on two different types of fabric (De Leon 2008; also Chang 1969; Swete Kelly 2008) which link to the northern Luzon. It is subsequently found in the Cagayan Valley (Mijares 2007), Masbate in central Philippines (Solheim 1959c: 180), the Sulu Islands in southern Philippines, through to Sulawesi, Indonesia and then eastwards to the Pacific to the Mariana Islands (Hung *et al.* 2011; Pellett and Spoehr 1961; Spoehr 1957) and as part of the Lapita pottery complex (Kirch 1995; Sand 1999; Shutler 1999; Spriggs 1990).

The red-slip and decorative styles have been the key attributes for describing this tradition (fig. 2.2). Impressed half circles are also present in varying patterns, often found in two pairs of opposed horizontal rows alternating the openings between rows, so that they form interlocking half circles or interlocking, horizontal 'S' shapes. Bellwood and Dizon (2005) state that the stamping traditions of the Cagayan Valley (Mijares 2006, 2007; Ogawa 2000, 2002a, 2002b – also red-slipped) and Batanes Islands, northern Philippines (De Leon 2008; Swete Kelly 2008; fig. 2.2c), possibly form the background to the stamped pottery found in the Marianas and in the Lapita

Tradition (also Hung *et al.* 2011). A form of red-slipped stamped pottery with white infilling has also been found at Ille Cave and its relationship will be discussed (Chapters 6 and 7).

While the red-slipped circle stamped trait appears to be widespread, it is not necessarily an early trait that can be linked directly to the initial expansion of pottery producing and/or Austronesian language-speaking populations. These large-scale explanations of the past have tried to identify long-term social and cultural processes and developments across all of Southeast Asia with little regard for understanding smaller levels of interaction. However, recent research in the region is moving towards examining and understanding Southeast Asia in terms of the small-scale, local regions and differences between sites, as well as detailed analyses of archaeological assemblages (Lloyd-Smith 2009: v). This research does not aim to situate itself in these debates; it does however, acknowledge that these overarching narratives shape the way that ceramics are studied and contribute to ceramic narratives.

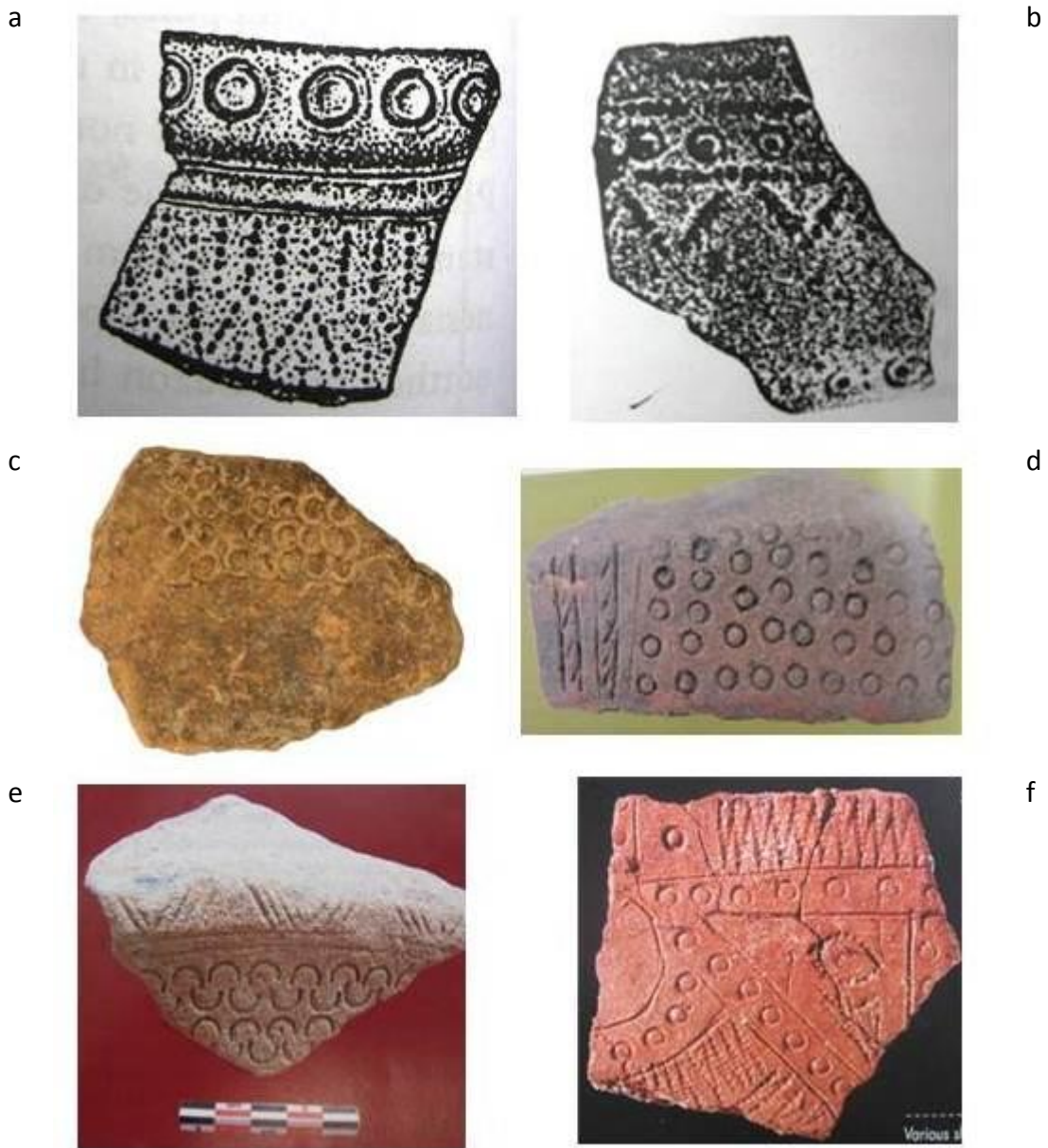


Fig. 2.2 Range of red ware, possibly red-slipped, ceramics with circular stamped impressions from Southeast Asia and the Pacific

Fig. 2.2a. Red-slipped pottery with circle stamps, Masbate, Kalanay, the Philippines. No scale (image: Solheim 2003a: 6)

Fig. 2.2b. Red-slipped pottery with circle stamps, Yuanshan, northern Taiwan. No scale (image: Solheim 2003a: 7)

Fig. 2.2c. Red-slipped pottery with circle stamps, Batanes, northern Philippines. No scale (image: Swete Kelly 2008)

Fig. 2.2d. Red-slipped pottery with circle stamps, Malawa, southern Sulawesi. No scale (image: Simanjuntak 2008)

Fig. 2.2e. Red-slipped pottery with semi-circle stamps, Kalumpang, western Sulawesi (image: Simanjuntak 2008)

Fig. 2.2f. Red-slipped dentate and circle stamped Lapita pottery, New Caledonia, Melanesia. No scale (image: Sand 1999)

2.1.7 The Tabon Caves and other ceramic sites

The Tabon Caves excavated by Robert B. Fox and the National Museum of the Philippines have been central to the understanding of ancient cultural development in the Philippines. In terms of the ceramics, c.1500 whole vessels were found and tens-of-thousands of sherds which show a homogenous, wide but related range of forms and decorations. All were handmade, paddle and anvil impressed, tempered with sand and fired at a low temperature. Forms included various restricted and unrestricted vessels, jar burial vessels and pedestal bowls. The pedestal bowl was significant in Philippine culture and believed to have been used primarily as ritual offerings vessels where the bowl portion received food or libations and were deposited on top or adjacent to the burial (Bautista 2003; Valdes 2003b). One vessel of particular note is the Manunggul Jar, a unique Neolithic secondary-burial jar with incised running scrolls, curvilinear designs and impressed decorations (fig. 2.3). The 'ship of the dead' lid features a boat with two figures thought to represent the journey of a soul being ferried into the afterlife. In addition to complex burial practices, this vessel shows that there was a developed cosmology for the afterlife in this period. In addition to primary and secondary jar burials, supine and extended inhumations were excavated, some of which were associated with whole vessels. During the Contact Age, evidence of local trade with China includes porcelain and stoneware ceramics during the Song Dynasty (960 to 1279 AD) and Yuan Dynasties (1280 to 1368 AD).



Fig. 2.3 The Manunggul Burial Jar with 'ship of the dead scene' (close up right), Tabon Caves, southern Palawan, Philippines (image: National Museum of the Philippines 2007a)



Fig. 2.4 Left: Maitum Anthropomorphic Burial Jars with two arms, nipples, navel and male sex organ. Contained bone fragments and human teeth. Right: Maitum Quadrangular Burial Jar with four ear lugs on the body and scroll design. Contained bone fragments and human teeth. Ayub Cave, southern Philippines (image: National Museum of the Philippines 2007b)

Fox's descriptions of the pottery and its contexts were often more dramatic rather than analytical. In discussing the Jar Burial Assemblage of Chamber B, Guri Cave he recounts:

In a small, dark, interior grotto surrounded by limestone pillars – an incredibly beautiful setting for burial jars – one whole jar and fragments of another were found embedded in a flow of limestone and sitting on a nearby ledge, a complete jar and cover (Fox 1970: 52).

These discursive passages are often without any interpretative inference and Fox (1970: 75) admits he will “attempt only a preliminary description of the general features”. His descriptive initial analyses of the ceramic types were based on surface treatments including decorations and form (discussed in Chapter 5).

Fox also uses the presence and absence and quantity of bound or carved paddle decoration as a pottery attribute to determine relative time sequence and migration. In discussing the Tabon Impressed category, Fox (1970: 117) suggests that the absence of paddle decorations was highly significant as it was absent or rare in the late phases of other Developed Metal Age cave sites in Palawan. Therefore, he classified paddle decorated vessels as characteristically Late Neolithic and Early Metal Age, and not Developed Metal Age.

Fox used pottery to strongly demonstrate migration, but not the migration of a single people (Fox 1970: 160). Based on the evidence from Tabon, Fox (1970: 161-2) stated that “the temporal change in the basic technology and the types of ornaments, suggest a number of separate movements of people into Palawan during the Late Neolithic and Metal Age”. Fox further clarifies what he meant by movement. He does not mean waves of migration as set forth in Beyer and Solheim's discussions of Philippine culture history but rather “small-scale movements by boat of probably kin-oriented groups along the coasts bordering the China Sea basin” (Fox 1970: 162). However, Fox (1970: 94) concurs with Solheim that a widespread pottery tradition existed in Southeast Asia where the pottery complexes of Sa Huynh in Vietnam, Niah in Borneo, and Kalanay in the central Philippines have some levels of relatedness though exact relations remain unknown.

While the Tabon Pottery Complex may be related to these sites, Fox (1970: 94) also believed that it had loose genetic ties through the presence of cord marking which were evident in the pottery of Malaya, Thailand and south China but absent in Kalanay. Fox (1970: 98-100, 178) rightly felt that the Tabon pottery was not a part of the Kalanay pottery complex, based primarily on the common early presence in the Tabon pottery of cord marking and carved paddle impressions and their virtual absence in the Kalanay pottery tradition. Fox (1970: 96) refutes Beyer's (1948) idea of a "Jar Burial People from some other area on the central China coast migrating in the Iron Age" and Solheim's idea of "waves of migration" where "various pottery complexes depended upon each other for their development. Rather, the related pottery complexes appeared to have developed by and large independently from one another showing many local specialisations and elaborations in form and design." He attributes this fact, along with his own ethnographic research on contemporary Philippine folk potters, to the reason the Tabon Pottery Complex has unique features and lacks some of the characteristics of related pottery found in neighbouring areas.

The successive movements of people also imply the dissemination of beliefs and ritual practices. The jar burials are a chief component of what Fox (1970: 166) calls "a highly developed cult-of-the-dead" which also included ritual and funerary pottery (though apart from the jars themselves there is little discussion of what this pottery or ritual is), body maceration and bone washing, painting bones with hematite, the use of ships of the dead scenes and grave furniture. These practices developed and were widespread in Southeast Asia which implies a shared culture and continuity across time and space.

The excavations at the Tabon Caves were a massive undertaking. It was one of the biggest excavations of its time and turned out to be the most enduringly significant for the archaeology of the Philippines. However, a frustration for modern researchers is that Fox's 1970 publication was not followed up with further publication or analysis and archaeologists today still rely on the 1970 report although it has not been updated. Fox expected further volumes to be written but these were curtailed by ill health and have yet to materialise. Fox (1970: 75) acknowledged that "a thorough study of this pottery would be a major project in itself, worthy of the attention of one

or more ceramic specialist” and that his “descriptions of the provisional pottery types are brief and general, stressing the distinctive pottery for comparative purposes.” Fox (1970: 78) expected that “detailed descriptions will be presented in subsequent reports or in special studies by other students.” Unfortunately all mentions of the pottery at the Tabon Caves focused on the jar burials with only a brief mention of utilitarian/domestic pottery and no other pottery reports were published. Significant archaeological sites in northern Palawan are discussed in Chapter 3.

Another significant site to note is Ayub Cave, Maitum, Mindanao, Southern Philippines for its ceramic assemblage and burial practices. More than a hundred decorated anthropomorphic secondary burial jars were discovered containing teeth and phalanges. Each earthenware jar had a unique facial expression with appliqué ears, mouths and chins, and forms that suggested human figures including shoulders, arms and breasts (Cuevas 2003). Some vessels included surface finishes of red and black paint and a red-slip running scroll motif and some were cord marked and incised. Foot rims with cut-out patterns also occurred (Dizon and Santiago 1996: 191). Some vessels contained jarlets and were associated with iron blades, shell scoops, and personal adornment such as bracelets, glass beads, and pendants estimated to be from the Metal Age c.500 BC to AD 500 (fig. 2.4; Dizon and Santiago 1996; Dizon 2003). The anthropomorphic jars will be compared with ceramics from the Dewil Valley (Appendix B Comparative Ceramics from Dewil Valley and El Nido).

While open and habitation sites are scarce in Palawan, in the Cagayan Valley, northern Luzon, Philippines, there is a wealth of Neolithic cave and open sites which contained habitation and burial sites. Magapit and Nagsabaran shell midden sites have red-slipped pottery with dentate stamped and incised motifs (Mijares 2007). At Andarayan, red-slipped pottery had been dated to 3700 BP (2037-2137 BC) with rice chaff temper (Snow *et al.* 1986). At Mustang Cave, the pottery was manufactured using coiling, and paddle and anvil techniques with sand temper. Four colours of earthenware were differentiated: red-slipped, polished black, orange and red brown (Thiel 1988: 123). Associated artefacts for these Neolithic sites include shell and stone beads and bracelets, penannular earrings or lingling-o, as found in other parts of the Philippines

and Island Southeast Asia, and bone and stone tools (Bellwood 1997; Mijares 2007). These sites give an insight to habitation that is missing from northern Palawan.

2.1.8 Other ceramic sites in Neighbouring Indonesia

It is difficult to build a unified picture of pottery studies in Indonesia because of the many islands and the geographical spread. However, early pottery studies in Indonesia focused on defining forms such as bowls, *kendi* (water pitchers) or *tempayan* (local term for jars) and dividing these groups further (Soegondho 2003). Decoration and function were also key attributes. Studies were descriptive rather than analytical (Soegondho 1995; Mulvaney and Soejono 1970). Since the 2000s, focus has moved towards contributing to the Austronesian debate and there has been a resurgence in this subject. Sulawesi is considered the centre of the Indonesian archipelago and it became a 'stop over' as humans and animals extended their migration to neighbouring places (Simanjuntak 2008: iii). Excavations at the Neolithic site Minanga Sipakko, West Sulawesi, has yielded high proportions of thin, red-slipped sherds in lower deposits and thicker coarser tempered sherds with sand and without red-slips in upper deposits. The red-slipped pottery is similar in form and decoration to the red-slipped pottery horizon associated with the Austronesians (Simanjuntak *et al.* 2008) and ceramics from Malawa, southern Sulawesi, have circular and semi-circular stamps (figs. 2.2d-e). Simanjuntak *et al.* (2008: 73; also Prasetyo 2008: 81) relate change in technology to Austronesian occupation. Sites were excavated in spits and changes in technology can be related to stratigraphic layers. Simanjuntak *et al.* (2008: 67) state that the presence of the coarse and low-fired pottery in the late occupation period, replacing the red-slipped pottery, indicates a technological change. Furthermore, chemical analysis of the two types of pottery found that the coarse wares were similar to the local clay, whereas it is thought that the early red-slipped was imported or transported by the Austronesians via the Karama River (Simanjuntak *et al.* 2008: 67).

However, despite siding with the Austronesia Out of Taiwan hypothesis, Prasetyo (2008: 89) compares the Sulawesi decorations to Solheim's Sa Huynh-Kalanay decoration types even though Solheim's hypothesis for movement points to Vietnam as the homestead and the Sa Huynh-Kalanay pottery tradition is Iron Age and not

Neolithic, to which the Sulawesi pottery is dated. Prasetyo (2008: 89) explains the decoration as some elements consistently appearing together while other elements never appear on the same vessel. Prasetyo (2008: 89) acknowledges that there is some relationship. However, it might be a case of these researchers fitting the Sulawesi pottery into previous research for continuity. The Neolithic of western Indonesia in comparison is less well known (Bellwood 1997: 236).

In Borneo, the archaeology of Sarawak has had many long term excavations. Gua Sireh, western Sarawak has cord marked paddle impressed pottery (Bellwood 1997; Solheim 2007: nd.). Some sherds have rice temper which have been AMS dated to c.4500 years (Bellwood 1997: 237). This date for rice is the oldest evidence for putatively domesticated rice in the Indo-Malaysian archipelago (Bellwood 1997; Bellwood *et al.* 1992; Doherty *et al.* 2000; Ipoi and Bellwood 1991). Bellwood (1997: 237) suggests that the early rice date, the rice temper, and predominance of paddle impressed pottery opens the possibility that the assemblage reflects the arrival in Sarawak of a Mainland Southeast Asian rather than Austronesian population. However, Barker (2006: 224) suggests that rice cultivation began simultaneously throughout Mainland and Island Southeast Asia rather than spreading southwards as predicted by the Austronesian dispersal model.

Solheim (1983, 2007: nd.) considers the pottery from Sarawak to be from the Sa Huynh-Kalanay pottery tradition because of the range and similarity of decorations. In the north east of Sarawak, the pottery assemblages of the Niah Caves are mostly found in the context of burials. There are some unique pieces like the elaborated incised and painted 'three-colour ware' (Ipoi 1993; Solheim *et al.* 1959) and double spouted vessels (Harrison 1971).

Lloyd-Smith and Cole (2010; also Barker 2013; Cole 2012; Lloyd-Smith 2009) situate the practice of jar burials in a wider context of the history of the cemetery; examining the appearance of jar burials in terms of burial histories and ritual practice. There are more than 18,000 earthenware sherds of varying forms. Ceramics were found as grave goods placed above rather than inside an interment and twelve jar burials contained

secondary burials, some with grave goods, with differences between the vessels. Lloyd-Smith and Cole (2010: 125-126) discuss the ceramics in terms of changing mortuary practice from jar burials c.1200-100 BC to secondary burials, and back to jar burials between 800-500 BC. The burials as containers and their grave goods related to aspects of attained wealth and social status within the Niah community. The proliferation of jar burials in Southeast Asia shows the mortuary practices of Niah had shared roots with the wider region, but the absence of conformity in vessel use and other practices indicate the jar burial cemetery was a fluid practice adapted to the needs and beliefs of the people using the cave. This research has been important for considering the form and function of the pottery in relation to social practice; however it could be noted that the vessels described as 'cooking' and 'storage' vessels did not show characteristic signs of use such as sooting or abrasion.

2.1.9 Recent ceramic studies

At the end of the 1970s, the successive generation of archaeologists moved away from studying early periods to examine the development of complex socio-political systems in the late first millennium to the early second millennium/Contact Period after c.900 AD. A long-term archaeological research programme was established in Negros Oriental, central, Philippines (Hutterer and Macdonald 1982) and its research agenda was in line with the Processual Archaeology of its time and sought to address broad questions concerning cultural evolutionary processes, ecological diversity and settlement archaeology in a tropical environment. Methodologically, it incorporated regional surveys, detailed stratigraphic excavation and environmental archaeology. Many individual research projects were incorporated into this overarching project which provided the data to address these large-scale social questions (Bacus 1996a, 1996b, 1997, 1999; Junker 1990, 1993a, 1993b, 1994a, 1994b, 1996, 2000). Regarding ceramics, Junker's (1982) analysis of plain earthenware recovered from several sites in the region identified changes in the quantities and types of local earthenware over time, while Bacus (2004) assesses decorative styles and symbolism to express chiefly alliances and shared identities.

In modern Philippine archaeology, there has been argument for more Asian-centric discourse and theory rather than repeating western ideals of history and categorisation (Paz 2003, 2004a). Since the 1990s and the establishment of the Archaeological Studies Program at the University of the Philippines (UP-ASP), archaeological research has grown, and with it a new generation of archaeologists focusing on ceramics (Arriola 2010; Barretto-Tesoro 2003a, 2007, 2008; Dasallas forthcoming; De Leon 2008; Romualdez-Valtos 2009) including thin section analysis to address wider questions (Arriola 2010; Cayron 2012; Dasallas forthcoming; De Leon 2008; Mijares 2005; Yankowski 2005, 2008). However, more needs to be done to standardise the methods of analysis, quantification and reporting to build a systematic ceramic discipline.

2.2 Ceramics in the Lapita Cultural Complex

The study of pottery in the Pacific has benefited from prior work in Island Southeast Asia and has developed its own research agenda using petrography as a primary tool. Although there are different pottery cultures in the Pacific, this section will concentrate specifically on the red-slipped dentate stamped pottery of the Lapita Cultural Complex and its relationship to Southeast Asia. Pottery from Island Southeast Asia is seen as the antecedent for pottery in the Pacific and studies on Lapita pottery have focused on migration and the movement of Austronesian speaking people out of Southeast Asia and into remote Oceania (Allen and White 1989; Allen and Gosden 1991; Ambrose 1997; Bedford 2007). These people were part of a vast migratory movement who possessed their own social organisation and civilisation (Bedford *et al.* 2006; Burley 2003; Chiu 2003; Green and Kirch 1997; Green 2000; Torrence and Swadling 2008). The red-slipped Lapita pottery, as well as Marianas Red from the Mariana Islands which predates the Lapita pottery, has been seen as related to the red-slipped pottery horizon of Southeast Asia (Bellwood 2005; Hung *et al.* 2011; Pellett and Spoehr 1961; Shutler 1999; Swete Kelley 2008; Spoehr 1957). Similarities in pottery decoration have been used by Pacific archaeologists to identify the spread of settlement over the Pacific and the presence of inter-island interaction and exchange between geographically separated areas. Sand (1999: 23) says dentate-stamped

pottery of the Lapita cultural complex is the most easily recognised archaeological marker for the initial peopling of the insular southwest Pacific between 1200 and 800 BC.



Fig. 2.5 Burnished, red-slipped, calcareous-tempered, lime filled impressed rim sherd with c stamped decorations on the lip, Pre-Latte rim sherd from Tarague, Guam. From Solheim nd. Report on Gua Sireh. No scale. (Image: H. Kurashina, <https://www.flickr.com/photos/guampedia/sets/72157625901006742/detail/> accessed 1 February 2014)

The forms and decorations have been the main subject of study (Bedford 2006; Chiu 2005, 2007; Kirch 1997; Mead *et al.* 1975). In particular, circle stamping is prevalent, as seen in the Lapita ceramics from New Caledonia, Melanesia (fig. 2.2f). So far, the only evidence of 'c' stamped pottery is from Tarague, Guam (Pre-Latte c.2500-1600 BP [551-766 to 415-534 BC]; fig. 2.5, Kurashina 2010). The Lapita decorations are highly distinctive with intricate stamping. There have been two main approaches to analysing the decorations. Sand (1999: 49) states that "in order to classify Lapita decorative motifs an identification code was established during the 1970s based on the methods of analogy that are employed in linguistics. A second approach focused on the study of the techniques employed to make the designs." Kirch (1997: 125) says that there can be little doubt that the Lapita potters had a well-developed cognitive model of this design system and which had a framework of explicit rules for the creation and application of motifs and a grammar or rules of syntax for the design system (Mead *et al.* 1975: 19). This framework for analysis enables researchers to understand historical relationships between Lapita communities to see if change in decoration has occurred over time and space and to make comparisons between assemblages at different sites.

Examinations of manufacture have included extensive petrography by Dickinson (1971a, 1971b, 1998, 2006), chemical analysis in order to isolate regional mineral

signatures, and electron microprobe of the ceramic matrix (Summerhayes 2000). Temper aggregates in Lapita pottery include beach, stream, and rarely dune sands (calcareous sands), as well as grog and crushed-rock particles in some island groups. Exotic tempers can be distinguished from indigenous tempers because their compositions are incompatible with the geology of the islands where the exotic sherds are found (Dickinson and Shutler 1971; Dickinson 2006: 1, 1971b, 1993). Compositional studies show that pottery did not travel long distances. This reinforces the idea that stylistic similarity between Lapita pottery was generally not a result of pottery trade but 'trade in ideas'. Unlike early Austronesians who moved with their pottery, it is the design system that moves but the pottery usually does not, except in areas without access to suitable potting clay (Summerhayes 2000: vi). Examination of the red-slipped pottery, the designs especially the significance of circular stamping and Summerhayes' (2000) determination of rim types will be used in this research (Chapters 5 and 6).

2.3 Thai ceramic studies

This section focuses on Thai ceramics as it has one of the largest ceramic assemblages excavated in Mainland Southeast Asia and the longest continuous excavations. It is the most progressive in terms of using scientific methodologies and developing theories which will be drawn upon as lessons for the Ille ceramics. The research agenda in Mainland Southeast Asia, especially in Thailand, has focused not on migration, but on distribution, through trade and exchange, as a main driver for the movement of actual pottery and pottery types, and the development of a chronology. The pottery is not only analysed with archaeological and stylistic methods, but also sees the standardised use of scientific methods such as petrography. Good site recording has also allowed ceramics and artefacts to be stratigraphically matched allowing sequences to be linked to the established chronology. This has enabled a stronger focus on the organisation of production and distribution of pottery. In turn, this has led to the development of advanced theories concerning wider social organisation and the movement away from western parochial views of hierarchical societies and towards a more appropriate notion of heterarchy for Southeast Asia.

Assemblages comprise a large range of often complete and elaborately decorated vessels (Labbé 2002; Vincent 1988, 2003a). For example, those at Ban Chiang are striking with red painted geometric designs on buff. These vessels seem to be special-purpose ceremonial ware specifically associated with burials (Van Esterik 1973). Because of the amounts of ceramics excavated, many with good stratigraphy, a great deal of quantitative work has been carried out on decoration, form, and fabric to suggest vessel function. Functions such as cooking, storage and serving are suggested by vessel size and shape (Vincent 2003a, 2003b; White and Henderson 2003). The excavations at Non Nok Tha by Bayard in the 1960s revealed the largest assemblage of first and second millennium BC pottery from an archaeological site in Thailand. Vessels could be used to help date and interpret much of the stratigraphic sequence. As discussed below, developing a chronology has been paramount and attempts were made to correlate vessel fabric to cultural phases. At another key site, Khok Phanom Di, a large coastal, hunter-gatherer site, the ceramic sequence can be linked to changes in burial practices (Vincent 2003a, 2003b).

Chronology is a primary concern in Mainland Southeast Asia. Pottery studies in Thailand have been at the forefront of these developments. Cultural phases have been developed at most Thai sites and attempts are being made to calibrate them across the region. However, over the last 40 years, there has been intense debate and dispute regarding the first appearance of bronze metallurgy which preceded the Iron Age in mainland Southeast Asia, and the dating, technology, production, and social organisation that metallurgy entails (Bayard 1984a, 1984b, 1987; Gorman and Charoenwongsa 1976; *cf.* White 1986, 1997, 2008; White and Hamilton 2009). Pottery has played an active role in these debates. AMS dating of rice chaff-tempered pottery, stratigraphic controls, and cross-dating can provide reliable chronometric evidence.

AMS determinations from rice temper from early Ban Chiang ceramics showed an internally consistent sequence with their relative stratigraphic source and provided a clear chronology for Ban Chiang's lower Early Period and its metal and metal-related remains (White 1997: 106, 2008: 96-98). White (2008: 99) concludes that the evidence indicates that bronze technology was present at the site of Ban Chiang prior to 1500

BC and probably was present by c.2000 BC. Early introduction of metallurgy at Ban Chiang supports an argument for independent indigenous invention of metallurgy in Thailand or Southeast Asia. However, Higham's dating places the introduction of metallurgy much later and as a foreign import traced to the Shang Dynasty, China. Higham's preferred interpretation of the dating evidence at Ban Chiang is that the earliest bronze at Ban Chiang, and elsewhere in Southeast Asia, dates to 1500 BC or younger (Higham 1984, 1988, 1996, 2002: 113, 166, 2004: 52, 2006: 19). However, White (1988) states that the Shang dynasty, which is traditionally dated as beginning c.1600 BC, was too young to be the source for the earliest bronze in Thailand as Shang metalworkers employed very different smelting and casting technologies and emphasized a distinctive typological range in comparison with Southeast Asian early bronzes.

Higham *et al.* (2011: 588) have further argued that AMS dating may be unreliable. There are many sampling problems with the AMS dating of organic material in pottery, such as several sources of carbon present within the fabric of a pot; the sherd might be of low carbon; or contamination could occur with the clay matrix contributing old carbon or smoke and soot could be absorbed into the temper. They proffer that "other means are necessary if we are to obtain a reliable chronology for this site" (Higham *et al.* 2011: 590). As this technique is open to inaccuracies, in their view, its use should be set aside and any result seen as a *terminus post quem*. Furthermore, they believe that White and Hamilton's (2009) model was constructed on the foundation of impaired radiocarbon determinations from techniques which should no longer be employed (Higham *et al.* 2011: 596). However, there have also been some problems with the sampling where Higham has taken his data. Many of the charcoal samples dated from Ban Chiang were excavated in close association with skeletons (Higham 1988: 75; White 1986: 142, 1988: 57). An argument has been made that the burial-associated charcoal was re-deposited and significantly predated the interments (Higham 1984: 231, 1989: 126, 1996: 12). Higham has argued that the mortuary sequence, including grave good metals, could not be accurately dated by burial-associated charcoal dates. Although there are problems with AMS dating, it will be applied to samples from Ille

Cave with organic materials (Chapter 6). This may also elucidate information about agriculture in northern Palawan.

The debate about chronology and the origins of metallurgy are important because this relates to the question of the possible independent development, innovations, and transmission of this technology in Southeast Asia which, in turn, was related to the much broader issue of Southeast Asia as a culture area in its own right. In terms of ceramics, the pottery associated with the Metal Ages show expertise and artistry. The developments in pottery and metallurgy demonstrate a complex society with developed material culture and mortuary practices. The transmission and distribution of metals also tells us about movement of pottery as exotic goods and the success of copies of imported pottery made with local materials. Despite large assemblages and whole vessels, seriation is not enough for chronology and dating as accurate stratigraphy is necessary. However, these excavations show what can be done in open sites (i.e. non-cave sites), with less turbated strata to be able to produce clear stratigraphies which can be related to material culture and activities on site. There has also been a significant amount of scientific analysis on the pottery with research in Thailand producing more absolute dates (e.g. thermoluminescence at Khok Charoen and radiocarbon dating at Non Pa Wai, *cf.* Vincent 2003b: 232) to enable chronology.

Rice is also important in this debate. Higham (2002: 83) states that “the origins of rice cultivation represents one of the most vital and influential changes in the history of Southeast Asia” and the movement from hunter-gathering to the establishment of agricultural villages appears to have stimulated population growth. Rice was present at Non Nok Tha from the earliest use of the site, as indicated by impressions of rice husk and grain in pottery from the lowest level and up. Rice husk impressions were found in early pottery at Ban Chiang. As discussed above, although AMS determinations using rice have been problematic, rice not only tells us about agriculture in Mainland Southeast Asia, rice husks were used as temper. Vincent (2000, 2003b: 237, 2003c) states that “rice was not used in the manufacture of grog and this is crucial because there is no technological requirement for its presence in the fabric. Pedestal bowls are closely correlated with fabrics containing rice” thus he speculates that “the inclusion of

rice in these mortuary vessels, therefore, is considered to be a form of symbolic expression". Excavations in the region are ongoing and heated debates surrounding chronology continue.

Rather than migration, pottery is discussed in terms of distribution by trade and exchange. While similar ceramics have been found in different parts of Thailand, this does not automatically point to migration. Although ceramics may have similarities in decoration and form, there may be several alternative reasons for this. Vincent (2003b: 234) posits that "wares could be local copies of exotic styles; the pottery could be regional expressions of fashionable wares; or the pottery could have been imported." Exotic types are also found in local assemblages. Vincent (2003b: 236) says "this demonstrates that these forms had a regional distribution. One exotic ware from a distant igneous source was copied by the local potters, signalling the importance of imported pottery as prestige goods." Rather than basing the typology on decoration as Solheim and others did in Island Southeast Asia, the typologies in Thailand were based on forms and fabric. Some petrographic work has been carried out (Bubpha 2003; Johnson 1992) and such analysis has been able to throw light on the distribution of pottery.

In Thai archaeology, a large emphasis has also been placed on status and social complexity (Bayard 1992; Wilen 1992; White 2011; White and Onsuwan Eyre 2011). Much of this research has focused on the burial record. In discussing Khok Phanom Di, Higham (2002: 78) says it is a site which documents interactions between a community of hunter-gatherers with deep ancestral roots in the rich, warm estuarine habitat of Southeast Asia, and newly established farming communities in their exchange orbit. It was a society which grew to be wealthy and socially graded on the basis of controlling and participating in long-distance exchange. Ceramics have been shown as offerings to the dead and prestige items. Anvils and burnishing stones were also burial goods. A woman interred in burial 15 was richly endowed with grave goods. Her garment was encrusted with over 120,000 shell disc beads and a new form of jewellery made from *Tridacna* shells, such as discs, bangles, and almost 1000 large I-shaped heads. The grave also contained ten complete vessels, some of novel form, an anvil with an

ownership mark and two burnishing stones. Higham (2002: 68) considers her a potter and her body was covered by clay cylinders thought to have been intended for conversion into pottery vessels. Furthermore, the profusion of shell ornaments which came from afar signalled her high social attainment (Higham 2002: 78). Pottery workshops at Khok Phanom Di also tell us of the range of ceramics varied from coarse wares made with local clays to fine ware with exotic clays and bleb (Vincent 2000, 2003b). These examples of craft specialisation are an indicator of social complexity. This, and its potential for application to the Dewil Valley, is discussed in Chapter 4.

This section has highlighted the differences in agenda and approach between archaeology in Island and Mainland Southeast Asia. Even with a long history of excavation, strong datasets, good site stratigraphy and absolute dates, constructing a unified chronology remains problematic. This research draws upon the lessons from ceramics practice in Thailand such as approaches to typology, petrography and how ceramics can be used to understand social organisation through heterarchy (see Chapter 4).

2.4 Concluding remarks

This chapter has critically analysed the approaches to the study of ceramics and the role of pottery in the wider interpretation of Southeast Asia and the Pacific. It has shown how pottery has been used as a proxy for the movement of people as well as an indicator of the spread of agriculture. The need to look for a 'homeland' and to account for similarities in material culture over wide areas has resulted in debates over whether people migrated from southern Vietnam via Solheim's notion of the Nusantara Trading and Communication Network, or as part of the Austronesian expansion under the 'Out of Taiwan' hypothesis championed by Bellwood. However, the extent to which the ceramics from Ille Cave can contribute to these discussions will be examined (Chapter 7).

Although there has been a long tradition of pottery studies in the Philippines, the pottery data has been shaped to fit a research agenda tied to migration theories.

However, as demonstrated there has been a fundamental problem with how data was previously collected in the Philippines in terms of the descriptive nature and the quality of analysis. There is a strong need for systematic collection of data and the creation of classification systems that can be applied across assemblages to be able to link datasets together to make them comparable. This may also help towards creating typological frameworks which are lacking in the region. Solheim's original research focused on decoration as a traceable attribute and placed less emphasis on other attributes such as fabric and form, and few arguments have developed beyond this. This research moves away from style and decoration as units of analysis to an emphasis on technology as a means of understanding behaviour (Chapter 4).

It is easy to be critical of the pioneering studies on ceramics in Southeast Asia. However, these researchers laid the foundations for ceramic analysis and acknowledged that with successive generations the work would be updated and even superseded. These researchers looked forward to further debates taking place, with more input from local archaeologists (Bellwood 1997; Glover and Bellwood 2004; Paz 2004b). Early studies were products of their time. The culture historians sought to explain successive populations in Island Southeast Asia and, therefore, focused on migration theory with pottery as a proxy indicator for people. Research preoccupations today have changed and are also of their time. Today, studies are often more theoretically led as the successor of post-processualism. The resurgence of pottery studies in the Philippines looks promising. Researchers are learning lessons from past pioneers, and now have more access to archaeological materials, literature from the local region, as well as contemporary western theoretical discourse, and there is greater access to scientific techniques.

3. Ille Cave and its Environs

3.1 Introduction

This chapter discusses Ille Cave through the archaeological evidence found at the site and at the caves sites in the Dewil Valley (Archaeological Studies Program 2005-2006; Hara and Cayron 2001; Lewis *et al.* 2008; Paz and Ronquillo 2004; Paz *et al.* 2009; Paz *et al.* 2010; Paz *et al.* 2011; SEAICE 1999). The specific aim of this chapter is to put the ceramics into a wider context by discussing them against the other artefactual material and the range of mortuary practices at Ille. This evidence contributes to the understanding of the communities or social groups who used the cave, how they might have subsisted and the role that ceramics played. This chapter discusses the geological and archaeological environment of Ille Cave and its formation processes, the history of the archaeological research, funerary practices, material culture and means of subsistence. This chapter also reviews other archaeological research carried out in El Nido and wider Palawan which contributes towards the understanding of the ceramic and funerary contexts (Kress 1980; Paz *et al.* 2009; Paz *et al.* 2010; Paz *et al.* 2011; SEAICE 1999; Szabó *et al.* 2006; Szabó and Dizon 2007).

Ille Cave and Rockshelter (National Museum number IV-1998-P) is one of several cave complexes in the Dewil Valley, Barangay New Ibajay, the village located inside the Dewil Valley, in the municipality of El Nido. It is in the northern part of the island of Palawan, the westernmost largest island of the Philippines (119°30'19"E, 11°11'46"N, fig. 3.1). The barangay is 15 km northeast of El Nido town proper (*Población*). The Dewil Valley is approximately 7 km long and 4 km wide and characterised by rolling hills and flat lands surrounded by rivers, creeks and streams. The main Dewil river is south of Ille, it is mainly shallow with a few tributaries, and runs eastward towards

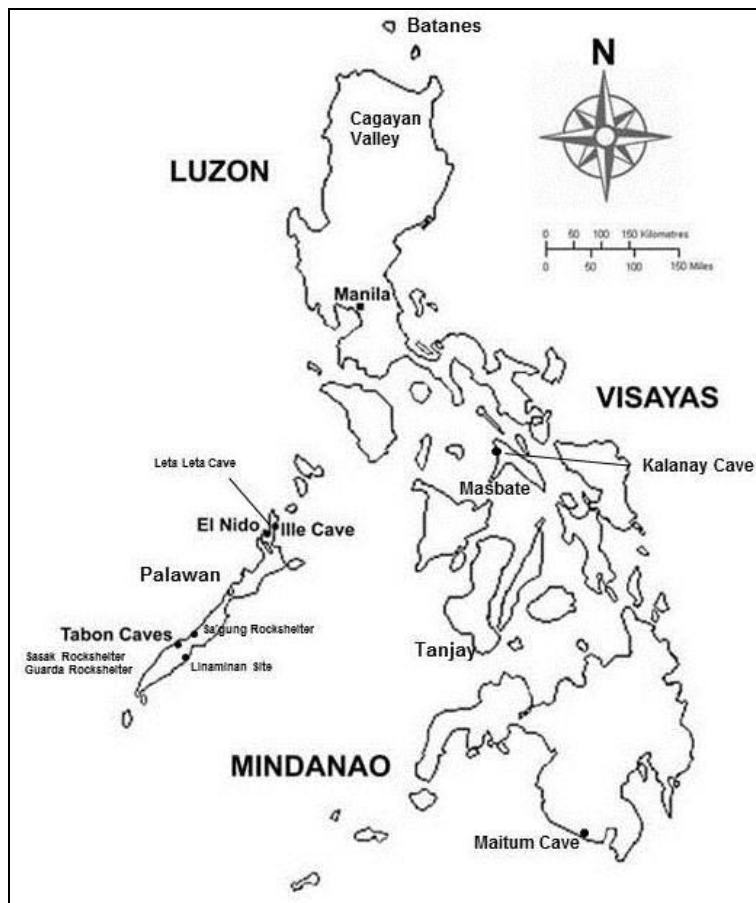


Fig. 3.1 Outline map of the Philippine Islands showing Ille Cave and other sites mentioned (image: Y. Balbaligo)



Fig. 3.2 Ille Cave from the east. The tower is c.75 m tall, see people to right for scale. The cave mouth and trenches are located at the base of the south side (images: Y. Balbaligo)

Sibaltan Bay on the northeastern coast. A large percentage of the land is used for agricultural purposes such as planting rice, vegetables and cashew nuts, and the pasturing of animals. Gathering the edible bird's nest of the pygmy swiftlet (*Collocalia fuciphaga*) and fishing are other sources of income for the current inhabitants. There is no direct continuity of ancestral communities. The Dewil Valley was reoccupied by people from Cuyonin, Panay Island, western Visayas, in the 1960s.

3.2 Geology and site formation processes

The cave is part of the Late Eocene Pabellion karst formation which is part of the Bacuit Formation and located at the base of a c.75 m limestone tower (fig. 3.2). The limestone is dense, grey to dark grey merocrystalline and displays thick, sub-horizontal bedding. The tower is cavernous with multiple, interconnected chambers and an overhang of c.10 m protects the platform in front of the cave from rain. Augering was carried out in the southern part of the Ille tower and the type of soil observed was clay soil ranging from clay loam to heavy clay and hematite was found mixed with the soil matrix (SEAICE 1999: 132).

Preliminary geological surveys of the bank and riverbed of the Dewil River that runs through Barangay New Ibajay revealed mostly sedimentary rocks. The alluvium deposits consisted of sandstone, siltstone and a mix of cobbles, gravels, boulders and sand in the drainage channel. The coarser materials are generally rounded fragments of schist, phyllite and chert derived from the basement metamorphics and other rocks in the vicinity (Santiago *et al.* 1999; SEAICE 1999: 86). Geological surveys of northern Palawan found the lithology of the Bacuit Formation includes sandstone, altered tuff, calcareous sandstone, chert and slate (Aurelio and Peña 2002: 199-200). Other relevant lithology from adjacent areas include serpentine, gabbro, and granite, both biotite granite and schlieren granite, in central Palawan (Santiago *et al.* 1999: 12). Overall, Palawan Island is under-researched and the Dewil Valley has not been surveyed completely. Further investigations are needed to establish the geological time frame of the area, to reconstruct the ecological environment, as well as the sourcing of raw material including clay and lithics. There is also a need for more

updated and reliable maps of the area. The geology of northern Palawan is discussed more fully in the context of the ceramic petrography in the results Chapter 6.

In terms of site formation processes, the site is a low-lying relict cave with a range of deposits including water-lain deposits, speleothem deposits, water table variations, guano deposits, aeolian deposits and rockfalls. Clearly delineated natural deep pits which contained organic materials and artefacts have been recovered in parts of the cave (Kress 2005: 5-6) and clusters of rocks are frequently found which may have disturbed burials in antiquity. The area is aseismic, however, the rock falls may be the result of the formation of large limestone accumulations on the outside of the wall that would eventually fall due to their weight (Solheim 2004: 26). These events moved the cultural deposits at the surface resulting in the mixing of materials (Paz and Ronquillo 2004: 24). The exact mechanism through which the later cave platform built up is still uncertain, but includes guano deposition and possibly some Aeolian deposition along with the bulk associated with the cemetery deposits (Lewis *et al.* 2006: 57). Soil micromorphological work in progress, when compared with phytolith and macrobotanical analyses, will further understanding of early settlement and transformations of the landscape and the role humans played in these transformations (Lewis 2003; Lewis and Hernandez 2006). The cultural deposits comprise graves, pits, postholes, burning contexts and trampling. The main cultural activity for site formation was grave digging in antiquity. Latter period grave diggers were responsible for the disturbance of previous burials. Furthermore, numerous skeletons have been scattered by subsequent digging (Archaeological Studies Program 2005-2006; Hara and Cayron 2001; Paz and Ronquillo 2004; SEAICE 1999).

Taphonomical problems are common to cave sites. With Ille Cave, certain stratigraphically earlier deposits were found in places at higher depths than some stratigraphically later deposits because the cave platform sequence tips downward to the south with layers becoming thinner and less deep at the top of the slope (Lewis *et al.* 2008). Grave cuts were hard to identify due to extensive turbation and bioturbation and the burial phases have extensively truncated the identified surfaces. Modern activities which have caused turbation to the cave deposits include looting, modern

post holes from bird nesting. Bioturbation caused by termite nests, burrowing animals (wasp, scorpions, centipedes, ants) and rooting has been a significant problem. Termite colonies and large roots have displaced many of the skeletons. Rockfall has also created disturbances. These activities have made it difficult to understand the sequence of cultural deposits and burial phases.

Two main trenches at the cave mouth were opened. When facing north, the trenches were labelled East Mouth and West Mouth (figs. 3.3 and 3.4). A smaller trench was situated to the far west of the West Mouth called the Ihian trench. In the lower levels, more than 30 radiocarbon dates from the East Mouth from a well-preserved layer anchor the stratigraphy to a numerical chronology, making Ille currently the best-dated, well-stratified cave site in the Philippines from the terminal Pleistocene to mid-Holocene (Lewis *et al.* 2008: 318; Szabó *et al.* 2004; tables 3.1 and 3.2).

The West mouth trench sequence awaits comprehensive dating, but the layers can be associated with the East mouth through stratigraphic correlation (Lewis *et al.* 2008). The deepest deposits, overlying an apparent rock floor were dated to c.10,500 BP (10,469-10,584 BC) on charcoal determined as the Early-Holocene c.9000-11,000 cal BP ([8233-8269 to 10,781-10,986 BC]; Szabó 2004; Szabó *et al.* 2004; Lewis *et al.* 2008). This was overlain by a shell midden dated to c.5000-7000 cal BP (3713-3797 to 5845-5973 BC) on charcoal during the Mid-Holocene (Szabó *et al.* 2004). A cremation cemetery dated to c.9000-9500 cal BP (8233-8269 to 8754-8829 BC) was present in the shell midden and hearth sequence making it among the earliest directly dated secondary cremation burial in the region (Lara 2006, 2010; Lara *et al.* 2013; Lewis *et al.* 2008). However, the picture is more complicated in the upper cemetery phases. Based on pottery, lithic, bead and metal find typologies it is thought that many of the inhumation cemetery contexts date to at least the Metal Age and later. Phases prior to these are associated with regionally important early shell artefact production (Szabó 2005). A silver Spanish coin dated to 1761 (Carlos 2009: 14) shows the extensive cemetery range. Other materials for absolute dating (bones, shell, cave deposits) are in progress. The possibility of phasing and chronology linked to ceramic typology will be

discussed alongside the site Harris matrix which focuses on the ceramic contexts (Chapter 6).

3.3 A history of exploration

3.3.1 From the 1920s

Northern Palawan was first explored in the 1920s as part of Carl E. Guthe's (1927, 1929, 1935, 1938) material culture survey for the University of Michigan to collect ethnographic and archaeological material from the Philippines. Archaeological sites in El Nido were recorded. However, Guthe's work did not extend beyond recording and reporting what he surveyed and collected. Robert Fox followed Guthe's work in Palawan in the 1960s. He reported sites in Diwil [sic] and Taytay areas of northern Palawan (Fox 1970: 179) and caves and rockshelters in Bacquit Bay were excavated including Leta-Leta Cave situated in an elevated opening on the east side of Lagen Island (Szabó and Ramirez 2009). Though there are no radiocarbon dates, it is thought to be a Neolithic site dating to c.1000 to 1500 BC (c.3000 to 3500 BP) or earlier (Fox 1970: 178, 1978), with an assemblage of stone and shell artefacts (beads, pendants, bracelets, scoops, spoon, and lime containers) associated with nephrite adzes as well as stone ornaments and shell beads. The earthenware pottery has no parallel in the Philippines with several intact pieces, most notably the 'yawning jarlet' an anthropomorphic vessel depicting a yawning mouth; a footed cup and jarlet and a pedestal bowl with a lattice design (Fox 1970: 177).

3.3.2 From the 1990s

Fox's work was focused on the Tabon Caves in southern Palawan (fig. 3.1) and interest only returned to northern Palawan in the late 1990s through the initiatives of Non-Governmental Organisations (NGOs) such as the Philippine Rural Reconstruction Movement (PRRM), and the Southeast Asian Institute of Culture and Environment, Inc. (SEAICE). These initiatives were coordinated with the National Museum of the Philippines and Ten Knots - a private company that managed resorts in El Nido. Other surveys were also carried out in Palawan during the 1980s and 1990s to identify archaeological sites (Alegre 1989a, 1989b; Aguilera 1990; Mijares 1997; Paz 1998).

Earthenware ceramics from Tubigen Cave, Lagen Island; Malapacao Rockshelter, Malapacao Island; and Fernandez Cave, Cadlao Island were collected and examined for comparison as part of this research (Paz 1998; sites discussed below).



Fig. 3.3 Ille Cave, East mouth trench, 2007 (image: Y. Balbaligo)



Fig. 3.4 Ille Cave, West mouth trench, 2007 (image: Y. Balbaligo)

Sample number	Material	Context	Uncalibrated BP	Calibrated BP (2 sigma)		BC Range (OxCal 4.2)	Layer	Source
				Lower	Upper			
Period Metal Age, Neolithic, Contact Period, Modern Age								
-	Coin	903=1224	1994	1994	1994	1994	Cemetery	PIPRP report
-	Coin	748=1244 = 47a	1761	1761	1761	1761	Cemetery	PIPRP report
OxA-14959	Charcoal	731	5820 ± 38	6494	6677	5469-5485 to 5563-5631 BC	Cemetery	Lewis <i>et al.</i> 2008
Period Mid-Holocene c.5000-7000 cal BP (3713-3797 to 5845-5973 BC)								
OxA-21176	Charred <i>C. hirsutum</i>	332	5829 ± 35	5400	7200	4242-4327 to 6026-6076 BC	Shell midden	Carlos 2010
ANU-11866	Charcoal	332	5200 ± 210	5489	6407	4333-4352 to 5341-5468 BC		Szabó <i>et al.</i> 2004
ANU-11869 (B1)	Charcoal	332	5720 ± 300	5908	7253	4726-4800 to 6061-6206 BC		Szabó <i>et al.</i> 2004
ANU-11869 (B2)	Charcoal	332	5410 ± 130	5914	6446	4729-4825 to 5376-5475 BC		Szabó <i>et al.</i> 2004
Period Early-Holocene c.9000-11,000 cal BP (8233-8269 to 10,781-10,986 BC)								
ANU-11872	Charcoal	334	6020 ± 330	6121	7570	5000-5195 to 6427-6453 BC	Hearths	Szabó <i>et al.</i> 2004
ANU-11868 (B1)	Charcoal	334	6540 ± 250	6809	7921	5669-5723 to 6696-6821 BC		Szabó <i>et al.</i> 2004
ANU-11873	Charcoal	334	7660 ± 260	7957	9231	6775-7028 to 8348-8541 BC		Szabó <i>et al.</i> 2004
ANU-11868 (B2)	Charcoal	334	8580 ± 200	9090	10187	8280-8297 to 9832-10074 BC		Szabó <i>et al.</i> 2004
OxA-16095	Charcoal	758	5769 ± 37	6481	6662	5386-5484 to 5561-5626 BC		Lewis <i>et al.</i> 2008
Period Early-Holocene c.9000-9500 cal BP (8233-8269 to 8754-8829 BC)								
OxA-16020	Charcoal (cremation bone)	758	8155 ± 50	9006	9260	8237-8273 to 8461-8556 BC	Cremation cemetery	Lewis <i>et al.</i> 2008
OxA-15982	Charcoal (cremation bone)	758	8315 ± 50	9280	9425	8472-8571 to 8640-8753 BC		Lewis <i>et al.</i> 2008

Table 3.1 Radiocarbon dates from the East mouth of Ille Cave 2004-2010, Metal Age to Early-Holocene

Sample number	Material	Context	Uncalibrated BP	Calibrated BP (2 sigma)		BC Range (OxCal 4.2)	Layer	Source
				Lower	Upper			
Period Early-Holocene c.9000-11,000 cal BP (8233-8269 to 10,781-10,986 BC)								
OxA-14898	Charcoal	335	8545 ± 40	9480	9550	8747-8810 to 8793-9120 BC	Hearths	Lewis <i>et al.</i> 2008
OxA-14893	Charcoal	335	8705 ± 40	9546	9784	8788-9119 to 9251-9281 BC		Lewis <i>et al.</i> 2008
OxA-16153	Charcoal	(155 cm)	8705 ± 45	9559	9696	8805-9121 to 9182-9240 BC		Lewis <i>et al.</i> 2008
OxA-14960	Charcoal	(166 cm)	9400 ± 45	10515	10733	10473-10599 to 10710-10779 BC		Lewis <i>et al.</i> 2008
OxA-15873	Charcoal	784	8725 ± 55	9549	9895	8792-9120 to 9295-9362 BC		Lewis <i>et al.</i> 2008
OxA-15818	Charcoal	784	8790 ± 40	9627	10120	8879-9185 to 9696-10020 BC		Lewis <i>et al.</i> 2008
OxA-21178	Charred <i>C. hirsutum</i>	784	8680 ± 40	9500	10100	8754-8829 to 9670-9846 BC		Carlos 2010
ANU-11870 (B2)	Charcoal	336	8170 ± 170	8596	9528	7586-7601 to 8770-9115 BC		Szabó <i>et al.</i> 2004
ANU-11867	Charcoal	336	8770 ± 260	9152	10496	8294-8417 to 10467-10582 BC		Szabó <i>et al.</i> 2004
OxA-21177	Charred <i>C. hirsutum</i>	336	8595 ± 40	9600	10200	8842-9149 to 9871-10080 BC		Carlos 2010
OxA-14899	Charcoal	336	8799 ± 40	9663	9951	8961-9225 to 9327-9443 BC		Lewis <i>et al.</i> 2008
OxA-14896	Charcoal	336	8860 ± 45	9766	10171	9245-9274 to 9816-10045 BC		Lewis <i>et al.</i> 2008
OxA-14894	Charcoal	336	8920 ± 45	9905	10198	9299-9367 to 9868-10080 BC		Lewis <i>et al.</i> 2008
OxA-14897	Charcoal	336	8970 ± 45	9918	10071	9304-9381 to 9553-9805 BC		Lewis <i>et al.</i> 2008
OxA-14592	Charcoal	336	9340 ± 45	10419	10687	10169-10463 to 10682-10764 BC		Lewis <i>et al.</i> 2008
OxA-15817	Charcoal	717	8795 ± 45	9627	10146	8879-9185 to 9771-10041 BC		Lewis <i>et al.</i> 2008
OxA-15766	Charcoal	769	8830 ± 45	9701	10154	9190-9245 to 9806-10038 BC		Lewis <i>et al.</i> 2008
OxA-16657	Charcoal	807	9215 ± 45	10252	10501	9895-10169 to 10470-10585 BC		Lewis <i>et al.</i> 2008
OxA-21179	Charred <i>C. hirsutum</i>	807	9220 ± 45	10200	10500	9871-10080 to 10469-10584 BC		Carlos 2010
OxA-14163	Charcoal	337	9740 ± 75	10786	11273	10736-10787 to 11123-11204 BC		Lewis <i>et al.</i> 2008
Period Terminal Pleistocene c.11,500-14,000 cal BP (11,334-11,450 to 14,868-15,215 BC)								
OxA-16666	Charcoal	866	12120 ± 60	13820	14116	14573-14976 to 15086-15421 BC	Clay and Gravels	Lewis <i>et al.</i> 2008

Table 3.2 Radiocarbon dates from the East mouth of Ille Cave 2004-2010, Early-Holocene to Terminal Pleistocene

A survey carried out at Ille Cave in 1998 recognised that the site had high research potential (Jago-on 1998; Paz 1998; Solheim 1999). The area was mapped and a test excavation was carried out by the National Museum of the Philippines, University of the Philippines-Archaeological Studies Program (UP-ASP) and the Solheim Foundation. Excavation at Ille Cave started in 1998. A datum point was established in front of the eastern mouth of the cave to provide a location from which a series of grids were laid out over the site. The grids were given co-ordinate numbers. The first square, northeast of the datum point was designated N1E1, one square north and one square east of the datum point (SEAICE 1999: 33).

Excavation was done by trowel, except when excavators came across solid clay which was then excavated with digging sticks. A 1.87m x 1m test pit was placed at the front of the West mouth. However, labour, time constraints, the presence of human burials, and large buried boulders limited the depth of this excavation to less than a metre (Hara and Cayron 2001). The first full scale excavation was carried out in 1999 by the National Museum with four excavation areas following the 1m x 1m grid previously established across the platform and excavated using a spit/layer system (Bautista 1999; Cayron 1999; De la Torre 1999a, 1999b; Solheim 1999). Several human burials were excavated as well as a shell midden. Subsequent fieldwork seasons continued excavation in the same areas to reach the deepest and oldest cultural layer and expanding the adjacent areas for better working access as the excavation went deeper (Paz and Ronquillo 2004). At new excavation areas, the scraping of the surface followed a series of 10 cm arbitrary spits until a clear natural contour could be followed. All features were recorded in plan form and in the vertical profile when possible. A recording system that emphasised both the horizontal and the vertical record was applied.

In the early years, ceramics were found mostly on the surface and at shallow depths and included decorated and undecorated earthenware, stoneware and porcelain (Hara and Cayron 2001). However, none of the finds could be associated with confidence to any of the surfaces recognised at the site as there had been so much large scale

turbation (human and natural) in the upper layers where the sherds were recovered. It was assumed that all these artefacts were in secondary deposition, as part of fills for burial pits dug through the centuries (Archaeological Studies Program [ASP] 2005-2006; Paz and Ronquillo 2004).

By the end of the 2002 season, substantial progress was made in the understanding of the archaeology at Ille. There was now better evidence for a shell midden layer in both the West and East mouth excavation areas; more burials and artefacts were uncovered similar to the results of the previous excavations; more importantly, a series of tight radiocarbon dates came out for the stratigraphic sequence at the East mouth excavation area. The dates allowed for a clear understanding of the time depth of the cultural deposits from the excavated shell midden layer to around the depth of 125 cm from the surface. There was a consensus in the understanding that below the recorded shell midden, there was a strong case for cultural remains below the radiometric dated c.10,000 years-ago-level from the 2002 season (Szabó *et al.* 2004). No excavations in the Dewil Valley were carried out in 2003.

3.3.3 Years 2004-2008

In 2004, excavations resumed in the area under the directorship of Prof Victor Paz (University of the Philippines), Dr Helen Lewis (University College Dublin) and Mr Wilfredo Ronquillo (National Museum of the Philippines) with the University of the Philippines-Archaeological Studies Program and an international collaboration and called the Palawan Island Palaeohistoric Research Project (PIPRP; also called the Palawan Island Prehistory Project [PIPP] during the years 2005 to 2008). Excavations were conducted as part of the field school of the University of the Philippines-Archaeological Studies Program and as rescue archaeology in response to looters who had vandalised the area. Before excavations in 2004, looters had opened two large pits inside the cave and at previously excavated areas at the East mouth. This further contributed to the turbation at the site (Paz and Ronquillo 2004).

Under British trained directors, a new recording system was implemented. The site was excavated using single context recording which was deemed the best way to

adequately understand sites with many graves (H. Lewis pers. comm. 2012). This ensured that in successive years, all artefacts recovered were from a secure context and recorded and accessioned systematically. The grid system from previous years continued to be used, and further recorded in 1 x 1 m squares by contexts and large contexts were also divided into 10 or 20 cm spits (fig. 3.5). All deposits were either sieved in a 1/8 mm screen or floated for archaeobotanical remains, samples of large contexts were floated and the rest were dry sieved (ASP 2005-2006; Paz and Ronquillo 2004). Earthenware pottery and other artefacts excavated from 2004 to 2008 inclusive, form the majority of the dataset for this thesis as the standardised recording system implemented from 2004 allows confident association of artefacts with the stratigraphy from this period.

In the Dewil Valley, a 1 m x 2 m test pit excavated to 2 m which reached the water table was made on a seasonal rice field southwest of the Ille tower (Hernandez 2006; Paz and Ronquillo 2004). The intention was to look for open sites in the valley and investigate the nature of the matrix underneath the rice field for insights on the nature of the landscape before agriculture. The test pit did not yield any cultural remains. However, the pit was used for off-site sampling for palaeoenvironmental studies, soil micromorphology and phytolith analysis to look for signatures of human-based transformations of the landscape (Paz and Ronquillo 2004). Surveys and test excavations were carried out and earthenware ceramics from Makangit Cave, Idulot Cave, Tonio Cave, Pacaldero Cave, Lagatak Bukana Cave and Pasimbahan Cave were collected and examined for comparison as part of this research, as were ceramics from Sibaltan Open Site and Corong Corong Rockshelter in El Nido (ASP 2007; Paz *et al.* 2008; Paz *et al.* 2009; Paz *et al.* 2010; Paz *et al.* 2011; sites discussed below). The author excavated at Ille Cave and Pasimbahan Cave, and analysed the ceramics in the field in May 2007, prior to the post-excavation analysis which took place in November 2007, September 2008 to January 2009, and September 2009 to January 2010.

3.3.4 2009 and beyond

In the 2009 field season, the West Mouth was not re-opened and work concentrated instead on expanding the East Mouth area (Paz *et al.* 2009; Paz *et al.* 2010; Paz *et al.*

2011). A dense accumulation of pottery sherds were excavated and have been examined and compared to the ceramics found between 2004 and 2008. In the 2010 field season, trenches were expanded further. As in previous years, numerous artefacts of lithics, animal remains, metals, human remains (including burials), shells, ceramics, plant remains and beads were recovered. Furthermore, a new cremation burial was found. The survey of the Dewil Valley continued and test open site excavations commenced in Barangay Sibaltan, situated along the eastern coast by Sibaltan Bay approximately 4 km to the northeast of Barangay New Ibajay (Paz *et al.* 2009; Paz *et al.* 2010; Paz *et al.* 2011). The ceramics from these sites will be discussed in Appendix B. Ille Cave and sites in the Dewil Valley and El Nido continue to be excavated.

3.4 The mortuary context

The upper layer of Ille Cave is predominantly an inhumation cemetery. Below the shell midden, the users of the cave practised complex burial rites which included cremation and disarticulation with interment in containers. This section will discuss the excavation of the cemetery and the range of burial practices. The phasing of the burials in relations to the ceramics will be discussed as part of the chronological sequence of the site in the Results Chapter 6.

As discussed above, burials have been difficult to phase. Bones were exposed using soft brushes, plastic and wooden sticks, then drawn and photographed. Anthropomorphic measurements were taken while the bones were still lying *in situ* or after being lifted from the ground. Data pertaining to age, sex, pathology, postmortem damage and other trauma were assessed before bone retrieval to avoid destruction. Individuals were separated into general categories adult and sub-adult, and the sub-adult category was further subdivided into foetus/neonate/infant, child and adolescent. Only few skeletons were in relatively in good condition (Lara 2006).

In general, graves cuts have been hard to identify due to extensive turbation and bioturbation and it has been almost uniformly impossible to recognise the levels at

which the various grave excavations began (Kress 2005: 1). It is also difficult to ascertain whether there was an attempt at spatial organisation. In the northwest corner of the west mouth, four juvenile burials were found in close vertical and horizontal proximity. However, juvenile burials were found throughout the site, so this single instance of age segregation is difficult to interpret unequivocally (Kress 2005: 2). Reconstructing the cosmology or spirituality of the inhabitants of Ille Cave have also been attempted (Paz 2012) and this is work in progress.

3.4.1 Primary inhumations

Between 2004 and 2008, approximately 100 inhumations were excavated. Burial numbers were only assigned for skeletons found in a primary or original context. Skeletons of individuals whose portions were already exposed in walls were also given numbers although may not have been retrieved. A count of Minimum Number of Individuals (MNI), where a count of the least number of individuals represented by all the skeletons based on a skeletal element, was made by incorporating skeletons retrieved from previous excavations (Lara 2006).

Burials were predominately primary inhumations of both adults and juveniles (see Appendix F Context Register). Inhumations occurred as single burials and multiple burials. However, the multiple burials may be a result of disturbance from previous burials. The number of skeletons of infants and juveniles indicated a high mortality among the young in the source population. The condition of the bones was often seriously compromised by physical and chemical weathering making the identification of the age and sex of many of the skeletons difficult if not impossible (Lara 2006). A study of the teeth gave a better understanding of the ages and health of some of the individuals (Medrana 2002). A variety of burial practices were evident.

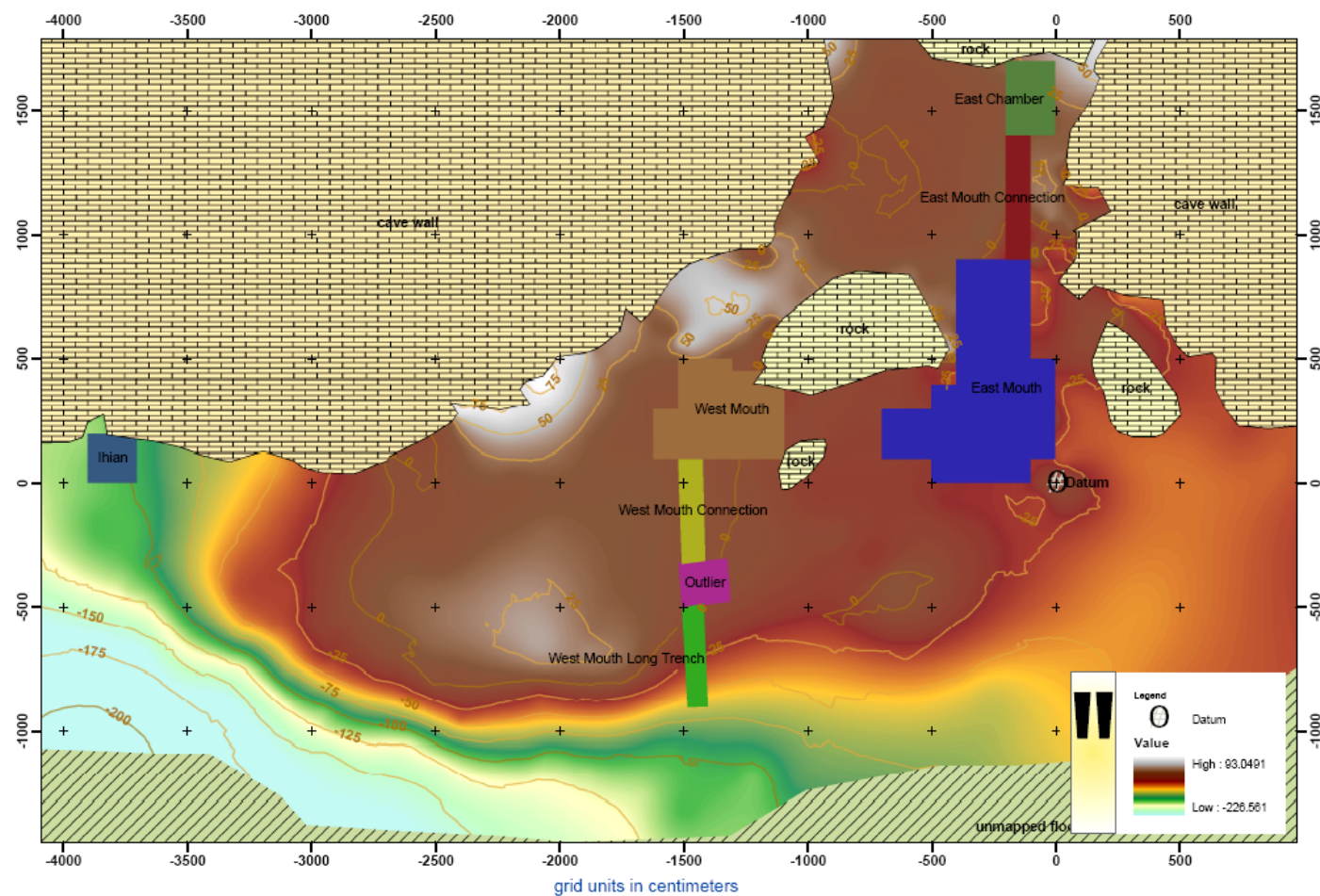


Fig. 3.5 Ille Cave Plan showing excavated trenches as of 2008 (image: courtesy of E. Robles)

3.4.2 Orientation

The majority of the burials were supine and extended, on their backs orientated north-south, with the head at the cave entrance pointing south and facing east though this may have been affected by post-interment settling or disturbance. At least three burials were orientated east-west (East mouth burials 918S and 931S and West mouth burial 77S). In a rarer instance, a burial was oriented southeast-northwest with the head at southeast (East mouth burial 1215S). A few adult and infant/neonate burials were also oriented towards the north, with the head to south and feet to north. Hand positions varied from both hands on the pelvic/lumbar area, both hands on clavicle/sterna area, right hand on the sternum/ribs and left hand on lumbar area, left hand on the pelvic area, left hand on the right abdominal area and right on lumbar area and undetermined positions (ASP 2005-2006; Lara 2006). Further investigation into the number of burials orientation, body and hand position corresponding to period or descending levels are yet to be carried out.

3.4.3 Grave goods

Very few burials had artefacts directly associated with them. Specific materials are discussed more fully below. Metals were found in the upper parts of the site in associations with burials (see Appendix F Context Register). One of the first burials recovered at the site was an adult female found with an iron point in the torso, possibly embedded in one of the vertebra (Solheim 2000). Burial 713S (East mouth) had a copper ring on one of the left proximal phalanges and burial 720S (West mouth) had a copper ring on one of the right proximal phalanges. Iron implements have also been found. Shell, glass and stone beads are also prevalent in direct association with burials. The skeleton of 931S (East mouth) was associated with dozens of tiny glass beads (red, yellow, green, blue), shell beads, and six carnelian beads. Most beads appeared to form a single necklace around neck, shell beads were also found in pairs at regular intervals across and under the torso, as well as an iron blade. Infant burial 77S (West mouth) was associated with an Indo-Pacific bead bracelet (Paz 2005). While most burials had few grave goods, burial 731S=727S (East mouth) had a large burial assemblage including two pairs of large shell disc beads found in proximity to the left and right forearms, a single shell disc bead near the waist, a group of smaller shell

beads and pig tusks, which may have been in a pouch, found underneath the pair of shell discs for the left forearm, a large partial conch shell at the right lower rib area and three flat rounded stones found in proximity to the conch shell and shell discs for the right forearm, one underlying the lower spine. The burial was intermixed with shells, some charred animal remains and human remains that were not part of this skeleton. No pottery sherds were found within the grave (Lewis *et al.* 2006).

Many of the burials were intermixed with animal bones, ceramic sherds and shells and other human bones commingled in their burial. This research will examine whether any of the ceramics are directly associated with the burials or whether any of the ceramics might represent jar burials. Further investigation on the burial assemblage in terms of skeletal analysis, analysis of the grave goods and depositional sequence is in progress.

3.4.4 Other burial practices

Red ochre covered bones were found deposited at the foot area of adult burials (for example burial 787S) and the foot of an infant burial. These were not part of the buried infant so they are thought to form part of a ritual offering (Lara 2006; Piper and Hernandez 2005). Red ochre has been found in other burials in Southeast Asia. For examples at Non Pa Wai, central Thailand red ochre was used in mortuary rituals and was available at an iron ore deposit at nearby Khao Tab Kwai (Higham 2002: 119).

Some burials may have had burial markers. Burials 727S and 874S were recovered underneath large rocks arranged in such a way as to cover the whole body. The limestone slabs and small boulders appear to have been placed directly on the body, with minimal matrix found in between them and the remains (Lewis *et al.* 2006: 13).

The remains of a dog burial, around the age of six months, was recovered in the West mouth at a depth of 30-36 cm, close to a burial, a 'pit' containing earthenware sherds, a shell scoop fragment and a small nephrite adze and a pile of stone slabs (ASP 2005-2006: 20). It is unlikely that the dog was eaten as indications were not observed. The articulated component of the specimen was composed of the cranium, mandible and

cervical vertebrae. However, its condition indicated that the dog was originally buried intact. The analysis of the dog remains showed that they were of domesticated species. It is possible that the dog was buried intentionally, either as an individual or as a grave accompaniment (ASP 2005-2006: 20; Ochoa 2005, 2009).

Cremation burials which date between c.9000-9500 cal BP ([8233-8269 to 8754-8829 BC] early Holocene; Lewis *et al.* 2008: 325; also Lara 2006, 2010; Lara *et al.* 2013) suggest that tightly stacked fragmented burnt human bones were originally placed within an organic container. The human remains underwent a series of modifications before burial, including disarticulation, fragmentation, burning and re-fragmentation. No charcoal was found in direct association with the bones, which appear to have been cleaned before interment. There are also indications that the cranium was skinned and the tibia defleshed. Cut marks were found at various locations, mostly situated at or close to articular joints (Lara 2006, 2010; Lara 2013 *et al.*). It is clear that the skeleton underwent elaborate ritualistic behaviour and burial practice. Despite the cut marks, Lara (2010, Lara *et al.* 2013) calls for caution when arguing for cannibalistic behaviour based purely on bone morphological grounds. There are some partial parallels with other sites in the region. At the Niah Caves and other cave sites, cremation burials in containers (mainly urns), piles (possibly originally in baskets, wooden containers or cloth), or small pits have been described. These have not been directly dated, but form part of Neolithic and Metal Age cemetery contexts (Bayard 1996-7; Fox 1970; Harrison 1967).

3.5 Material culture

3.5.1 Ceramics

The earthenware ceramics are the main subject of investigation in this thesis. Both low-fired earthenware and high-fired sherds comprise the largest number of artefacts found. Prior to the analysis of the earthenware, the following had been reported:

The decorated sherds show various designs, based on comparisons with previous archaeological studies, some of the designs have been traced back to time depths of 4500 to 3000 years ago such as the red-slipped pottery sherds with impressed circular design; in some pieces, these impressed circles are filled with a white substance most likely lime or white clay. A variation of designs, mostly geometric forms, some painted red, were also recovered from the site. These types of pottery were usually associated with what is conventionally called the 'Metal period' in Philippine archaeology c.2500 to 1500 years ago. Cord marked, basket marked and paddle impressed designs might even be earlier as these designs are found in Southeast Asia and associated with the Neolithic.

(ASP 2005-2006: 29; Paz and Ronquillo 2004: 14-15)

The surface treatments and decoration had been estimated to time depths of 4500 to 3000 years ago based on the red-slipped pottery which was ascribed to the Austronesian expansion (Bellwood 1997: 2005) and to c.2500 to 1500 years ago based on Solheim's (1964a, 2002) Sa Huynh-Kalanay pottery tradition. Previous reports also uncritically ascribed the decorated earthenware to the Sa Huynh-Kalanay pottery tradition and this was perpetuated in subsequent reports. Kress (2005: 25) says "the earthenware ranges from numerous examples and varieties of elaborately decorated Sa Huynh-Kalanay through more simply incised or impressed wares to completely plain wares". However, in the preliminary stages of this research, the author observed discernible differences between the Ille assemblage and the Sa Huynh-Kalanay pottery tradition. This research examines these premises, distinguishing the Ille assemblage from the Sa Huynh-Kalanay pottery tradition, and aims to go beyond using decoration to analyse ceramics.

In addition to earthenware pottery, there are high-fired sherds such as stoneware, celadon and porcelain which were imported and can help to date the final phases of cave use. The high-fired ceramics and other cultural materials are usually attributed to the Contact Age from Chinese traders from tenth century AD. In contrast to the amounts of earthenware excavated, only few high-fired sherds have been found. In Philippine archaeological literature most high-fired ceramics have *en masse* been called "tradeware". However, this term is a misnomer as some of the stoneware may have been manufactured locally. This research will use the term 'tradeware' when it is discussed as such in the literature and to refer to ceramics made outside of the

Philippines, but where possible, it will be more specific in its analysis referring to these ceramics by their ceramic type if known (e.g. celadon, stoneware) or as high-fired pottery.

Ille reports describe “tradeware”, comprising stoneware, celadon and porcelain, ranging from tenth to fourteenth century CE. The stoneware comprised a range of glazed colours including browns, oranges, whites and greens. Large brown glazed sherds that came from the surface and sub-surface fills were determined to be Dusun jars from the tenth century, as opposed to the initial idea that they were “dragon” jars from the seventeenth century or younger (ASP 2005-2006: 29). Ethnographic accounts from the 1960s relay that the mouth of Ille Cave contained fragments of brown jars with dragon designs that have subsequently been looted. It is possible that these jars could have held secondary burials (Paz 2012: 148). The colour of the celadon ranged from brownish green to light green with iridescence. Some had swirl patterns and the glazes were speckled and crackled. The majority of the celadon sherds were thin and one light green sherd was possibly a bowl from the thirteenth to fourteenth century AD (*cf.* Southeast Asian Ceramics Society 1979: 136-137). Appliqué handles were also found possibly dating from the tenth to twelfth century AD (*cf.* Balbaligo 2009; Southeast Asian Ceramics Society 1979: 128). Fewer porcelain sherds were found, however, a site exists on top of the Ille tower called Tuktok ng Ille (IV-2007-V) which is younger than the artefacts excavated in the cave, and collections have included blue and white porcelain, brown stoneware sherds and some earthenware (ASP 2007: 15). In comparison to the earthenware, there are relatively few stoneware, celadon or porcelain sherds at the Dewil valley. While these high-fired ceramics at Ille are considered, detailed examination is outside of the scope of the thesis. However, an assessment of their occurrences on site will be carried out to aid the chronological sequence and will be discussed in terms of provenance and distribution. Separate investigations are needed on the high-fired and non-local ceramics at Ille and in the Dewil Valley.

3.5.2 Stone tools

Stone tools contribute to the understanding of the habitation context, other activities and the technological practices on site. The stone tools found include hand axes (Pawlik 2010), hammerstones, adzes made from chert and jade which showed traces of use-wear indicating hafting onto wooden shafts using plant fibres (Pawlik 2006), a high proportion of cores but little corresponding debitage (Barton 2006a; Lewis *et al.* 2008: 323) and flakes of limestone, obsidian and chert (Paz and Ronquillo 2004). The used component of the assemblage is largely composed of informal tools (unretouched flakes and cores) with few retouched flakes in the assemblage (Barton 2006a). The form and morphology of a tool found in 2007 showed it to be handaxe-like stone tool or proto-handaxe made of limestone (Pawlik 2010). An analysis of two Neolithic stone adzes showed the polished edges showed the effects of use, reworking, hafting and re-hafting on a wooden shaft with phytolith-containing plant fibres and used on hard organic materials like wood. This use is similar to use-wear analysis undertaken on chert flake tools which showed polished work edges, indicating that they may have been used for wood working or siliceous plants (Barton 2006b; Lewis *et al.* 2008: 324).

Although the lithic assemblage contains a high proportion of cores, there is little corresponding debitage (Barton 2006a). Lewis *et al.* (2008: 325) postulate that the lithics found suggest that Ille was not a primary stone tool production site and that other types of occupation and/or tool production sites must, therefore, have been located elsewhere in the landscape. The lithic debitage found at Makangit has been proposed as a site for stone tool production in the Dewil Valley (Teodosio 2004).

3.5.3 Shell artefacts

Shell as a resource was abundant, not only for consumption but for manufacturing ornaments and tools. Szabó's (2005; also Swete Kelly and Szabó 2002) study on the shells found in Ille cave, found that the cave was a production site of shell artefacts from the late Holocene with an emphasis on shell beads and states that the "Neolithic appears to be a highly dynamic period for shell working" (Szabó *et al.* 2004: 218). There are many types of shell beads found at Ille Cave. However, shell beads were

mostly found in burial contexts or by sieving the burial fills which makes it difficult to associate to excavated features.

Shell bead manufacture was prolific in the Neolithic. Basilia (2011) concludes that although, Francis (2002: 203) argued that shell bead production had “virtually disappeared” in the Metal Age, the manufacturing of shell beads did not stop in the Metal Age when stone and glass beads became more popular. Shell beads continued to be manufactured and metal drills were employed during the Metal Age to continue the production of the ‘microperforated cut shell beads’ (Basilia 2011). Thus a high level of craft specialisation and technological precision existed unseen in the Neolithic bead assemblage (Basilia *et al.* 2006; Basilia 2011; Szabó 2005). Worked shell has also been found and fragments of *Tridacna* spp. shells have been recovered that looked like they were the by-product of a manufacturing process. However, the implements from this manufacturing process were not recovered. Paz (2012: 146) suggests that deposits of non-worked *Tridacna* spp. in burial contexts were left as offering. Other personal adornment included shell disk pendants made from *Conus* spp. shells (Vitaes 2009) and shell linglings-o possibly made from *Tridacna* sp. and recovered from fill material at the East mouth and not directly associated with burials, unlike bead ornaments. Shell lingling-os have also been found at Sa’gung Cave Site, southwestern Palawan (Kress 1980, 2004). This is unusual as lingling-o are usually made of jade and a widely traded object in Southeast Asia (Bellwood 1997; Hung *et al.* 2006; Hung *et al.* 2007).

The use of shell may represent local modification of a traded object. A ‘T-shaped’ bracelet made from *Tridacna* shell was found inside a crevice of the rockfall, together with a fragment of a *Melo* shell artefact, and shell beads (ASP 2005-2006; Vitaes 2009). This type of bracelet was common in the archaeology of Mainland Southeast Asia for example at Khok Phanom Di, a large coastal, hunter-gatherer site (see Higham and Bannanurag 1990), but is the first of its kind found in the Philippines. A ‘trumpet’ shell (Solheim 2004) and burins and scoops were found. Vitaes’s (2009) study of *Melo* shell artefacts found they were related to burials deposits with ritual roles as grave goods. Some had red pigment and were ritually broken objects. He considers that the shell might be of value for its raw material, or be significant for personal associations

and personal identity or for cosmological factors such as the motif on the shells symbolising solar representations (Vitales 2009: 90; also Paz 2012).

3.5.4 Metals

In comparison to other material culture found at the site, there are fewer examples of metal work. Initial analysis was undertaken by Carlos (2009). Metal artefacts include blades, gold beads, rings of bronze and gold, coins, socketed axes, unidentified fragments and pieces of worked metal, all found in the upper layers of the site. Some of the metal artefacts were associated with burials such as copper alloy rings found on phalanges and a blade which was found in the chest of an individual. Blades were usually fractured, heavily corroded and determined to be iron (Carlos 2009; Lewis *et al.* 2006). The Metal Age of the Philippines is not clearly understood and further analysis is needed on the metal artefacts found at Ille.

Although lithics and the metal blades were the predominant tools found at Ille, ethnoarchaeological work by Xhaufclair (2012) in Palawan documents tools such as knives, made from Bamboo and other plants. Similar tools or implements made from plants may have been manufactured but would not have survived in the archaeological record.

The presence and production of stone tools, shell artefacts, and possibly bamboo and other plants tools, contribute to information about habitation and subsistence at Ille. Although it is difficult to associate these materials, it also demonstrates that along with the manufacture of earthenware ceramics, stone, plant and shell artefacts formed part of the suite of production 'industries' and communities of particular practice that were present in this period. There was a repository of knowledge for working with local materials in particular environments, and there was a degree of craft specialisation. Furthermore, microperforated cut shell beads were found in association with earthenware ceramics, thus bead typology can be used as an indicator of period. As shell bead manufacture is indicative of the Metal Age this may suggest that the production of shell beads and earthenware ceramics were coeval.

3.5.5 Ornaments and imported artefacts

In addition to the gold and shell beads excavated on site, Indo-Pacific and Chinese glass, steatite, jasper and carnelian beads were also found. The glass beads were numerous and comprised a variety of colours including opaque yellow, black, red, blue, orange, green (Cayron 2006; Szabó *et al.* 2004). It is thought that glass bead manufacturing was not established in the Philippines, therefore, the beads were imported or traded. It is most likely that they were 'Indo-Pacific monochrome drawn glass beads' (term after Francis 2002: 20) referring to the manufacturing technique, material and geographic distribution. Indo-Pacific beads were widely distributed in prehistoric Southeast Asia and also found at the Tabon Caves (Fox 1970). Chinese glass beads were present and made using the coiling technique, as hot molten glass was coiled around a thin wire. Carnelian beads were multifaceted bi-conical and spherical reddish-brown with perforations and also found at the Tabon Caves (Fox 1970). Again, they were recovered during sieving of the burial fills and provenance is currently unknown. Jade (nephrite and jadeite) artefacts included beads, bracelets, adzes and a lingling-o (see Hung *et al.* 2007; also Higham 1996) have also been recovered in the burial fill and during sieving.

As there are no raw material sources or jade making workshops in Palawan, the artefacts may have been imported. Chemical analysis to determine their probable source has been undertaken on some of the nephrite objects. The chemical composition showed that the nephrite was similar to that of the Fengtian nephrite source in Taiwan (Iizuka and Hung 2005). A question remains as to whether it was the raw material or the finished product that was imported (Hung *et al.* 2007).

These artefacts have been recovered at other sites in the Dewil Valley and across Southeast Asia. However, the raw materials for these ornaments do not occur in Palawan, and along with items such as high-fired ceramics and some metal artefacts, it is likely that these items were imported, traded or exchanged. However, whether the items were brought in as a raw material to be worked on locally or as a finished product is unknown. Some of these items, such as the lingling-o, were linked to widespread distribution networks as this artefact has been recovered in Mainland

Southeast Asia such as Vietnam, Thailand, Cambodia and also in Sarawak and Taiwan (Higham 1996; Hung *et. al* 2007). These jade items in particular, along with Sa Huynh-Kalanay pottery are artefacts which were traded and/or exchanged as part of Solheim's (2003a, 2006) Nusantara Maritime Trading and Communication Network (see Chapter 2). Overall, these artefacts demonstrate that a network was in place for the distribution of artefacts, either by trade or exchange at Ille Cave and within parts of the Dewil Valley.



Fig. 3.6 L-R: Jade (nephrite/jadeite) lingling-o; shell beads and Indo-Pacific glass beads; polished chert adze from Ille Cave (images: courtesy of the University of the Philippines-Archaeological Studies Program)

3.6 Evidence of habitation and subsistence

Although evidence of settlement sites are yet to be found, there are indications of habitation and subsistence at Ille Cave. The lower phases of Ille are less disturbed and the stratigraphy has been linked to a numerical chronology. Ceramics found below the cemetery phase are intrusive and cannot be linked to subsistence in these early periods. During the cemetery phase, some evidence such as small animal bone and other debris suggests that habitation, campsites or periods of resting may have occurred in this time (Piper *et al.* 2011). Features such as hearths and shell middens beyond the burials layers provide evidence of habitation. Evidence from the East mouth suggests long use as a place of frequent habitation during the early to mid-

Holocene. These activities have been interpreted to include hunting, food preparation, discard of food refuse, and activities such as planing siliceous plant materials and wood (Lewis *et al.* 2008: 325). Contexts containing shell middens and hearths provide information about possible habitation and subsistence patterns in the cave. Artefacts in the middens have been rare, though shell beads and possible quartzite worked flakes were found, and the few earthenware sherds that have been found are mostly likely intrusive (Szabó *et al.* 2004: 216).

3.7 Ceramic sites in northern Palawan

There are many limestone outcrops forming caves and rockshelters in the Dewil Valley, wider El Nido and islands surrounding the north Palawan peninsular. Fig. 3.7 shows the general location of cave sites in the Dewil Valley. Some of these sites have been investigated and earthenware assemblages and other artefacts have been found. Very few high-fired ceramics were found. This section discusses sites where the author had access to the earthenware assemblages collected at surface level for comparative purposes. These ceramic assemblages will form part of the comparative data for the thesis.

3.7.1 The Dewil Valley

Makangit (IV-1998-P, IV-2006-L) is a cave complex located in the Dewil Valley 400 m and 300° northwest of Ille Cave with several karst outcrops in close proximity to each other. The site was initially surveyed in 1998 and bat guano and earthenware sherds were observed in the cave entrance. In the central tower (IV-2004-U3), guano samples were taken for paleoenvironmental sampling as proxy evidence for understanding vegetation and climate change in the past. Results showed that the environment was characterised by grassland or wooded savannah vegetation during the Last Glacial Maximum c.20,000 BP (21,938-22,282 BC) and was eventually replaced by closed tropical rainforest in the Holocene (Bird *et al.* 2007). These findings agree with models that suggest the region was drier at this time with a decline or retreat of forest (Bird *et al.* 2005; Heaney 1991). In addition to earthenware, a concentration of lithic debitage, bones, deer antler and bone tools, some of which were fossilised, were recovered (Paz

and Ronquillo 2004). A majority of the flakes were chert and limestone flakes and remnants of tool knapping. However, few stone tools were found and no hammers were recovered. It is thought that the site was used for a short period as a lithic workshop possibly dating to the late Pleistocene or early Holocene (Teodosio 2004). Although chert stone tools were found at Ille, it is unknown whether Ille and Makangit belong to the same time depth; however, there is little evidence of stone tool making at Ille (Barton 2006a).

Idulot Cave (IV-2007-T), located in the southwestern tower of the Makangit karst complex, was originally explored by Fox in the 1960s and in the 1970s, artefacts were collected including lingling-o earrings, nephrite bracelets and decorated earthenware (Paz *et al.* 2010: 51). However, it was only resurveyed in 2007 when earthenware sherds, shell artefacts, and human bones with traces of red pigment on their surface were found (Paz *et al.* 2010: 51). Also recovered was a pre-form for a *Melo* shell scoop which is associated with burials (*cf.* Vitales 2009). In 2010, further excavation led to the discovery of more intricate decorated earthenware associated with the metal period, more burial jars shell artefacts, and human bones with traces of red pigment on their surface (Paz *et al.* 2010).

Tonio Cave (IV-1998-J) is located on a high limestone cliff towards the northwest of Ille Cave and close to Makangit. In the crevices at the entrance, jar fragments and other earthenware sherds were found. Large earthenware sherds next to scattered bones were found on the cave floor. Shell artefacts, including a *Turbo marmoratus* spoon fragment, a worked *Melo* scoop, a large polished adze fragment and iron implements were found (Reyes 2007).

Pacaldero Cave (IV-1999-G) was first explored in 1999 and is within the karst formation Sinalakan to the northeast of one of the large karsts Diribungan, 353° north of Ille Cave. Access to the cave is via steep slippery sharp limestone. Ledges inside and outside the mouth held large pieces of earthenware, human remains and a fragment of a shell bracelet (Paz *et al.* 2010; Paz *et al.* 2011; SEAICE 1999). Pacaldero yielded the only earthenware zoomorphic 'turtle-like' artefact found so far in the Dewil Valley.

All human remains were only present in the ledges and did not survive on the floors as they were covered with guano. In 2010, a further investigation led to the discovery of appliquéd pottery representing human faces associated with intricately designed sherds of burial jar covers, a portion of jar with a 'nipple', and various vessels with geometric designs and painted (Paz *et al.* 2010). Anthropomorphic ceramics are also found at Ayub Cave, Maitum, southern Philippines (Dizon and Santiago 1996).

Lagatak Bukana (IV-2007-X) is a large cave at the north side of Diribungan, one of the largest karst in the Dewil Valley, to the east of Star Karst. The cave was inhabited by a colony of bats and earthenware pottery has been found on small platforms inside the cave. Very little is known about Lagatak Bukana Cave as it has not been extensively surveyed (ASP 2007).

Pasimbahan Cave (IV-2007-Q) is located in the Magsanib district of Dewil Valley on the base of the southeast face of the 'Star' (Istar) Karst, southwest from Ille. Along with Diribungan Karst, it is one of the two largest towers in the valley. The site has been dated to the early Holocene c.8000-10,500 BP (6831-7046 to 10,469-10,584 BC) which corroborates with the early Holocene dates of c.9000-11,000 cal BP (8233-8269 to 10,781-10,986 BC) from Ille Cave and they have similar zooarchaeological and macrobotanical evidence from these periods (Ochoa *et al.* 2014). Two shell middens were found, one perpendicular to the cave and the other found at a small cave at the side of the main Pasimbahan cave which contained stone tools, animal bones and bi-valve shells (Paz *et al.* 2010). No pottery was found in the midden. A secondary burial was found inside a small crevice on a ledge above the limestone formations of one of the middens which comprised a cluster of bones covered with red ochre. Several individuals were recovered as well as a small tanged dagger-like metal blade with a broken tip (ASP 2007: 14). Scattered human remains and fragments of glazed stoneware sherds were found in association. Other finds included lithics, animal bones, shells, modified *Melo* shells, glass beads, metal implements, earthenware pottery and high-fired ceramic sherds (Paz *et al.* 2008: 19).

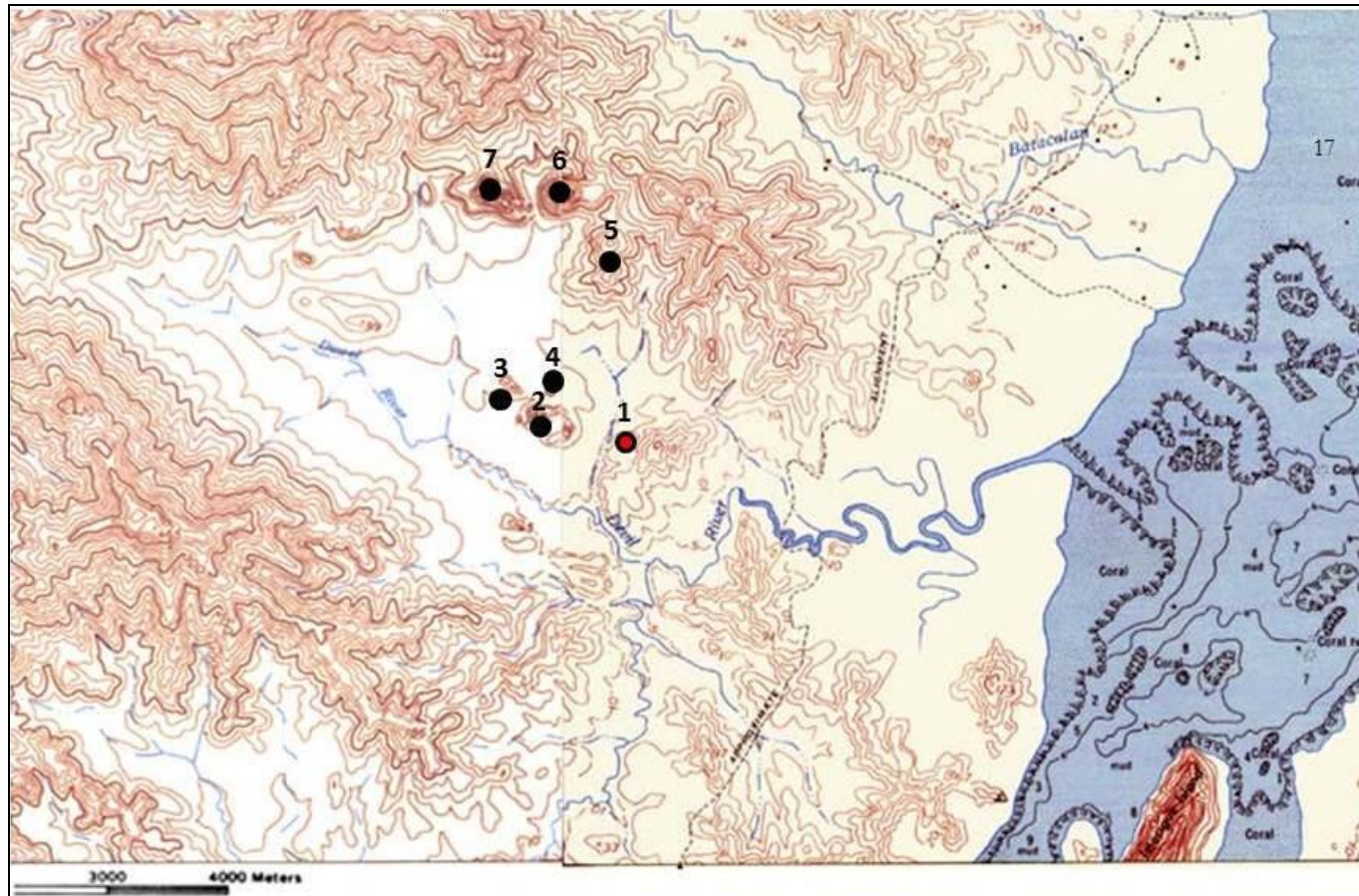


Fig. 3.7 General location map of cave sites in the Dewil Valley. 1. Ille Cave 2. Makangit Cave 3. Idulot Cave 4. Tonio Cave 5. Pacaldero Cave (Sinalakan) 6. Lagatak Bukana Cave (Diribungan) 7. Pasimbahan Cave (Star) (image: courtesy of the University of the Philippines- Archaeological Studies Program)

3.7.2 Wider El Nido

Open sites were sought in Barangay Sibaltan (administrative division and village) c.4 km to the northeast of Ille Cave along the eastern coast. A modern cemetery stands on the beach shore. In the late 1970s, sites were subjected to the looting of tradeware ceramics, such as blue and white porcelain and stoneware vessels (Paz 1998). An open site in Sibaltan (IV-1998-S) was first surveyed in 1998. Earthenware and high-fired ceramics from the surface were scant (SEAICE 1999). However, the potential of the area was reiterated in reports (Paz *et al.* 2008, 2009).

Sibaltan was resurveyed in 2009 and test excavations at four sites started in 2010. It is thought that Sibaltan is a cemetery and settlement dating to the Metal Age (Paz *et al.* 2010). In summary, the Sibaltan Elementary School Open Site (IV-2010-G1) yielded adult and juvenile burials of which some skeletons were directly associated with glass beads, shell beads, carnelian stone beads, a silver bead; though not directly worn as jewellery but rather sewn on a fabric used to wrap the body before burial, and metal alloy rings and metal blades. Only a few earthenware sherds were found in excavation; however, high-fired ceramics were abundant. The stoneware and white and blue porcelain can be dated to between tenth and fourteenth century AD (Paz *et al.* 2010).

Outside of the Dewil Valley in Barangay Corong Corong southwest of Ille Cave, Corong Corong Rockshelter (IV-2007-P) is part of the Palisok property and formed by a series of angular limestone boulder falls on the side of Corong Corong hill. Corong Corong has recorded cairn-like burial sites along the sides of its rocky karst formation (Paz *et al.* 2010). The site was heavily looted, but in 2007, human remains, earthenware sherds, and pieces of *Melo* shell scoops were found.

3.7.3 The Islands

Surveys and artefact collection took place on Islands in northern Palawan, close to the Dewil Valley (Paz 1998). Tubigen Cave (IV-1998-O) is located 200 m north of Leta-Leta Cave, Lagen Island and (noted for the anthropomorphic 'yawning jarlet' and cut out pedestal bowls) and was reached by climbing the rocks elevated to c.50 m. This cave

was first noted by Guthe in this exploration in the 1920s. In 1998, the site yielded few large earthenware sherds.

Malapacao Cave (IV-1965-X2) between the western coast of El Nido and Lagen Island, is composed of three small sites; I, I-A and II. It was originally explored by Fox in 1965 and considered a disturbed site (SEAICE 1999: 23). In 1998, the site was revisited and decorated earthenware sherds, shell fragments and scoops were found (Paz 1998; SEAICE 1999: 80).

Fernandez Cave (IV-1965-Y) on Bukal Island near to the larger Cadlao Island, is a multi-chambered cave on the sheer face of a limestone cliff and first explored by Fox in 1965. The site has large earthenware sherds, smaller earthenware vessels and human bones (Paz 1998; SEAICE 1999: 23). Survey took place in 1998 and human and animal bones with consumed shells were scattered on the disturbed floor. Samples of earthenware sherds, shells and a pebble tool were recovered (Paz 1998).

3.7.4 Ceramics sites found by Fox, 1960s

In addition to Leta-Leta Cave, in the 1960s, 84 cave sites were found along the west coast of Palawan (Fox 1970: 167) some of them containing ceramics. However, survey and excavation were not carried out, therefore, any discussion of earthenware pottery is more descriptive than analytical. Two rockshelters, Sasak and Ulo, in the Kalatagbak Area yielded Metal Age pottery which are notably different from the pottery types of the Tabon Caves based on decoration. Fox (1970: 169) noticed that the most frequent design from Sasak Rockshelter was the 'sloping-S' pattern' and patterns made with an *Arca* shell. Furthermore, cord marking was present. The sloping-S pattern only occurred once on one site at Lipuun Point at Pawikan Ledge. Fox (1970: 171) classified this as Metal Age pottery because it was found in association with glass beads and iron fragments, thought to be used after the principle period of jar burials at the Tabon Cave approximately 400 AD to 600 AD. These finds are significant because although the 'sloping-S' and *Arca* shell pattern are not predominantly found at Tabon, this design is found in the Kalanay pottery tradition and there is a small sample at Ille. This will be discussed further.

There are other sites in Palawan that were briefly explored and contained earthenware and jar burial cultures. However, apart from a short note that there was pottery, no other information was given. Fox states whether or not they showed similarities to the Tabon Pottery Complex. The Paredes Shelter on Langen Island showed an “intimate relationship to the jar burial complex of the Tabon Caves” (Fox 1970: 172). While Lungun Cave in the Kuruswanan area, which contained log-coffin burials dated to the Developed Metal Age, had decorated earthenware vessels but did not show any relationship to the Tabon Pottery Complex (Fox 1970: 172). However, there are very few illustrations or descriptions to substantiate this. The range of decorations and forms shows the variation of earthenware in such a small area. This will be a constantly recurring theme in this research.

3.7.5 Ceramics sites in southern Palawan

The Tabon Caves Complex has been discussed in Chapter 2. Two further caves sites which are significant in Palawan are the Linaminan Site and the Sa’gung Rockshelter. While most of the karsts in Palawan are limestone outcrops, Linaminan Site (IV-2006-F) located in Barangay Isumbo, Sofronio Española, southern Palawan, is formed from low-grade metamorphic rock. A preliminary investigation in 2006, found deep pits from looting activities and artefacts scattered across the floor of the site (Szabó and Dizon 2007). This included stone tools (adzes) associated to the Late Neolithic and Early Metal Age, metal implements, including a socketed bronze axe and bronze lingling-o, decorated earthenware sherds and some “Chinese ceramic fragments” (Dizon and De Leon 2006: 2). No contexts could be attributed to the finds. Excavation took place later in the year led by the National Museum to understand the archaeology, chronology and use of the cave (Szabó *et al.* 2006). The majority of the finds were earthenware sherds. A range of vessel types were present such as ring footed bowls/pedestal foot bowls, small globular jars, rims, fragments of lid covers and fragments of pottery ovens. No evidence of burning was found on the vessels. Although the site has large earthenware fragments, it does not have recognised burial jars. A wide range of decorative styles were found including incised and impressed decorations from simple tools, carved paddle impressions and cord bound paddle impression.

Red fired earthenware sherds with 'c' stamps and other incised and impressed decoration found at Ille were also found at Linaminan (Szabó 2010, *cf.* fig. 3.8 with figs. 6.3, 6.5, 6.6 and 6.7, Results Chapter 6). The sherds might be red-slipped though the sherds are abraded and it is difficult to assess if they are made of the same fabric. There are variations in forms of this type and the regularity of the actual c stamp between the two sites. However, to date, there is only one variation of the c stamp formation which appears consecutively (fig. 6.7a, Results Chapter 6). Only one vessel had stamped circles coupled with incised curvilinear designs (Szabó 2010). Other earthenware with similar forms and surface decoration were also found at Linaminan, such as pedestal bowls, impressed rims, carved and cord bound paddle impressed sherds, but there are also some forms not seen at Ille, such as a possible spout and perforated pedestal bowls. It is unknown whether ceramics were traded, exchanged or gifted between these two sites, or whether the idea of the decoration was transported which would account for the variation in forms, or whether there was some other local production site that traded to both.

Ceramic 'tradeware' stoneware and porcelain, though no blue and white, was recovered. Other artefacts included iron and bronze tools (spear points and blades), glass, shell and carnelian beads, stone artefacts (polished stones and cobbles, polished stone adzes and various coloured chert) and animal bones (including fish) and molluscan shells. Baked or fired clay artefacts were also found, such as fishing sinkers, spindle whorl and a clay 'figurine'. The temper has been found to be calcareous.

It is thought that the ceramics date the site to the thirteenth century AD or earlier, while two shell samples gave a date of late ninth to early tenth century AD (Szabó and Dizon 2007: 35). However, the earliest dates are unknown. Although there are some human remains present (though the environment is poor for preservation), full skeletons have not been recovered and evidence of domestic activity is negligible. Therefore, it is not thought to be a burial site or a habitation site. However, Szabó *et al.* (2006: 63) suggest that Linaminan is a "predominantly ritual space". The Linaminan

earthenware is significant. The ceramics share similar traits to the Ille assemblage (see fig. 3.8) and the site is significant and will be discussed in Chapter 7.

Another definite occurrence of c stamped pottery was found at Guarda Rockshelter, part of the Tabon Caves Complex, southern Palawan in 2001 (Bautista 2001; Bautista 2002; De La Torre 2001; image viewed by author but not available for reproduction). An ovoid restricted rim vessel with a rounded bottom measuring 63.5 cm in height and 63 cm in body breadth contained skeletal remains of an adult and a juvenile painted with red hematite with a bowl-like cover. This secondary burial jar was red-slipped, made with paddle and anvil technique, and around the neck coiled clay with “impressed punctuate design – that of an unfinished circle” (De La Torre 2001) which was a c stamp impression. No c stamps have been found on red-slipped restricted rim vessels at Ille. There is also an instance of c stamped pottery on the rim of a sherd from Tarague, Guam (Pre-Latte c.2500-1600 BP [551-766 to 415-534 BC]; fig. 2.5, Chapter 2). However, as yet no direct relationships can be inferred. The c stamped motif is a significant type in the assemblage which may have a relationship with circular stamped impressed pottery found in wider Southeast Asia (*cf.* fig. 2.2, Chapter 2). This ceramic narrative will be investigated further (Chapter 7).

The following rockshelter is cited to demonstrate the complexity and diversity of funerary practices at one site. Sa’gung Rockshelter is located c.6 km south of Pilanduk and Duyong Caves and north of the Tabon Cave Complex at Lipuun Point on the southern face of a limestone cliff. Kress (2004: 239) links these sites together and states that they “constitute a virtually unbroken archaeological record that stretches back in time perhaps more than 40 millennia”. The site is thought to be a habitation/campsite and burial ground (Kress 1980, 2004: 273, 2005: 3-4). Approximately 600,000 shells representing 76 species were found in a shell mound ranging from salt, brackish and fresh water environments (Kress 2000). Eleven burials were recognised. Kress (2004: 252) dates the earliest burial to more than 5000 BC and the latest to the Ming Dynasty (1368-1644 CE) based on ceramics. Of the eleven burials, some of the adult burials had their heads missing or displaced and some modification of the body took place where the teeth were filed and lime plugs were

found. One of the burials was an infant buried with glass and shell beads, which place it in the Contact Age. One of the burials was considered a secondary burial with a concentration of bones stained with hematite. Although this practice is considered alongside jar burials, no jar burials were found. Eight burials had grave goods. The early burials included crocodile tooth pendants, shell beads and pendants, edge ground axes, conch 'trumpet' shells, glass beads and a Ming celadon bowl. A skeleton of a monkey (*Macaca fascicularis*) without a crania was also interred, though it had no grave goods.

The earthenware pottery was found in close proximity to the burials but it is unclear whether they were associated. Kress (1980, 2004: 252) posits that the distribution of pottery throughout the site and its style makes it clear it is from a single Iron Age, Sa Huynh-Kalanay occupation. Small irregularly shaped cylindrical objects between 2-3 cm made of burnt clay and amorphous shapes 15-20 cm in length were found amongst fragments of limestone and pebbles. Beneath this concentration of clay objects was a layer of compact earth and beneath this a male burial. Kress (2004: 263) states that this practice is unknown in Philippine prehistory and postulates that the clay objects had been burnt above the body immediately after the burial (although no charcoal was found). The ceramics and the burial practices will be discussed in Chapter 7.



Fig. 3.8 Range of red ware c stamped pottery from Linaminan Site, southern Palawan. Image scale = 0-5 cm (images and information: courtesy of K. Szabó 2010)

Fig. 3.8a Rim sherd with neat c stamps and horizontal band. Mid-grey fabric and calcareous, quartz and charred organics temper. Year 2006 (IV-2006-F-1958)

Fig. 3.8b Rim fragment with coarse c stamps. Year 2006 (IV-2006-F-147)

Fig. 3.8c Rim sherd with semi-circular c stamps. Very fine calcareous and organic temper. Year 2006 (IV-2006-F-1115)

Fig. 3.8d Rim sherd with faint c stamps. Mid-brown fabric; red-slipped inside and outside. Medium type 1 temper. Year 2006 (IV-2006-F-55)

Fig. 3.8e Basal and lower part of a heavy vessel, incised design around body including c stamps, rectilinear patterns and chevrons. Temper: medium quartz and calcareous. Unevenly fired with unoxidised core. Year 2006 (IV-2006-F-2028)

Fig. 3.8f Body sherd with 'leaf' like shapes with punctates. Grey-brown fabric evenly fired; quartz and calcareous temper. Year 2006 (IV-2006-F-2133)

3.8 Summary

This chapter has discussed the archaeology and environment of Ille Cave within the Dewil Valley in order to situate the ceramics and mortuary practices into the wider context of the site and show how the ceramics were related to events and materials at the site. This chapter highlights the material culture and varied ceramic assemblages and the range of burial practices at Ille Cave and in Palawan, emphasising the diversity of practices throughout the island.

As discussed in Chapter 1, there are problems with the environment, and with the recovery and paucity of data. There are problems specific to the archaeology of caves such as taphonomy, turbation and bioturbation makes it difficult to associate materials to context; the tropical environment; and the preservation and the survival organic remains in these conditions where layers of guano have destroyed bone or plant materials. There have been problems in excavation and artefact labelling, where errors and inconsistencies in recording have taken a few years to identify and rectify. There is a paucity of data, especially in the lack of habitation sites which have yet been found in the valley. Remains of agriculture are also sparse. Therefore, it is difficult to reconstruct a complete picture of how people might have lived, moved and subsisted away from the caves, and to identify levels of social organisation.

Despite this, the data recovered at Ille, points to the occupation of the Dewil Valley in the terminal Pleistocene to the late Holocene by hunting, gathering and fishing groups who also practiced arboriculture. It is possible that groups were mobile and used Ille and other sites in the valley as temporary camps. The bones of small animals and other fauna, including the fish and shellfish, attest to this (Piper *et al.* 2011). The exploitation of the lowland rainforest trees for the wild nut *Canarium* indicates a forest-based subsistence and also the use of resin from the nut as fuel for burning (Carlos 2010). The lithics also show they had the tools to deal with their environment (Barton 2006a; Pawlik 2006). However, this evidence of subsistence cannot be directly associated to the upper burial phases. The ceramic assemblage shows pottery related to mortuary practices, and the range of burial customs and rituals demonstrates complexity which

may be related to a complex cosmology (Paz 2012). The range of decorations, forms and technology shows the variation of earthenware in such a small area. At present, it is unknown which, if any, of these sites in Palawan were contemporaneous with Ille Cave or if they had any contact. Evidence points to long distance maritime trade, if not internal exchange in the region, as can be seen with the Indo-Pacific and Chinese glass beads, high-fired tradeware and jade artefacts (*cf.* Cayron 2012). Status differentiation is hard to determine; however, the presence of metal implements and glass beads as grave goods may suggest this. Although there is at present a lack of evidence of pottery making sites, the manufacture of shell beads and other shell artefacts flourished which shows there was a shell bead industry, high level of craft specialisation and a demand for the beads which survived into the Metal Age taking advantage of the availability of metal tools (Basilia 2011).

Developing a sequence through the stratigraphy of Ille Cave may illuminate the upper layers further. The following Chapter 4 outlines archaeological frameworks for understanding communities and social organisation which is important to the understanding of the development of ceramic technology, learning traditions and burial practices at Ille Cave.

4. Theoretical Approaches to People, Pottery and Practice

This chapter examines theoretical frameworks in archaeology to understand two key areas of this research. Firstly, what is the importance of technology in ceramic practice? Secondly, how can groups of people be evaluated through the production and consumption of pottery, when groups of people and social organisation cannot be directly identified? These are crucial questions for Philippine archaeology and the understanding of Ille Cave. There is a problem regarding how to discuss the people who used Ille Cave and identify communities in the Dewil Valley. At present little is known about the people who inhabited the valley. As open habitation sites have yet to be found, the strongest evidence comes from the burial record and remnants of subsistence in the caves. This chapter discusses and critiques how previous generations of culture historians identified people using prehistoric pottery. The culture history approach remains a dominant influence on pottery analysis in the region.

In relation to this, it is also difficult to assess how people in the Dewil Valley were socially structured and organised. Processual archaeology had a strong focus on how past social organisation may be identified and neo-evolutionary approaches have developed models of chiefdoms and social hierarchy. This work had particular impact in Thai archaeology in the work of Higham (1989) where differentiation within society was based on social ranking and grave goods within a funerary context. However, use of chiefdoms and models of hierarchical structuring have been challenged by White (1995) who proposed broad patterns of heterarchy within prehistoric Thai society. There is a lack of evidence in the Dewil Valley for strong hierarchy, suggesting that a heterarchial approach might be more appropriate for the region and this will be explored further.

This chapter concludes with examinations of more recent theoretical developments regarding people and the importance of technology in ceramic practice and how this can inform an analysis of the Ille assemblage. This section discusses how technical and social processes can be identified in pottery production as a means of identifying ceramic tradition and its impact on variability. While decorative style has long been the means of identifying groups of people in Southeast Asia, there are significant problems with the assumption that pottery decoration is the main marker for group identity. Recent ceramic studies have emphasised technology and the deep seated continuity that can be explored through learning traditions. Overall, this thesis argues that within the overarching ceramic tradition found at Ille Cave, more than one learning tradition is evident indicating different learning networks and thus different communities of practice. These theoretical frameworks allow ceramics to be used as means to understand of people who occupied the Dewil Valley, allowing access to people and processes from a sparse archaeological dataset. The summary of previous work positions the approach of this thesis towards the importance of technology and understanding people as communities of practice, and it lays the foundation for the development of an appropriate methodology for recovering people and their ceramic processes.

4.1 Pottery and people in culture history

The foundations of archaeology in the nineteenth century, later termed culture history, were built upon the systematic ordering of material culture in terms of distribution and chronologies by assigning artefacts to cultural groups. Pottery has been used as the primary evidence for the formation of cultural groups and the development of archaeological classifications. Vere Gordon Childe (1892–1957), who worked within a culture historical framework, defined archaeological “culture” complexes of remains, including pottery, ornaments, and burial rites, which constantly recurred together. He assumed that such a culture complex was “the material expression of what would be called a ‘people’” (Childe 1929: v-vi). These remains were a material expression of a group’s cultural norms. The idea that ‘pots equals people’ has been used to express this (*cf.* Childe 1950). Implicit in the idea of the cultural

complexes was that when the complex 'moved', this signified that people also moved. This concept can be seen in the idea of the Bell Beaker Culture or 'Beaker Folk' coined by John Abercromby (1841–1924). The spread and adoption of the distinctive inverted 'bell-shaped' pottery drinking vessels was related to people conceptualised as "warriors and tinkers" (Sherratt 1994: 251). These people spread across Western and Central Europe from the late Neolithic to the early Bronze Age (c.2800-1800 BC). Their beakers were typically flat-based, handle-less with geometric incised and impressed decorations, often within horizontal bands or with cord impressions. In addition to pottery, this culture was associated with inhumation and burial grave goods weapons such as daggers (stone and then metal), archery equipment, and jewellery. It was previously postulated that the spread of beaker pottery and its associated cultural complex was evidence for the migration of people, either as traders or colonisers, where one population replaced or established domination over another (Abercromby 1902; Childe 1925, 1930, 1950).

However, research has moved beyond simple distribution patterns and typologising pottery showing that the Beaker Culture was not a homogenous culture, and originated in different regions of Europe (Czebreszuk and Szmyt 2012; Desideri *et al.* 2012; Turek 2012). Focus has shifted from the *process* of change to the *practice* of change (Van de Noort 2012). Rather than viewing the Bell-Beaker Culture as a coherent migration of distinctive people, the Beaker phenomenon is more commonly viewed as a 'package' of elite material culture associated with particular practices and an outcome of social transformations. It can be seen as the material expression of fundamental societal change and the emergence of more mobile and maritime ways of life in third millennium Europe (Fokkens and Nicolis 2012; Sherratt 1994). The study of the Bell-Beaker Culture shows how the treatment and understanding of people and material culture has changed with successive research. There are parallels with how Solheim's Nusantara Maritime Trading and Communication Network (Chapter 2) developed Beyer's idea of waves of migrating people (Beyer 1947, 1948; Beyer and De Veyra 1947). However, Solheim's work has not been developed sufficiently to examine social transformations and the practice of change on a smaller scale.

Culture historians have often assumed that a homogenous cultural identity was assigned to distinct social or ethnic group (*cf.* Beyer 1947, 1948; Beyer and De Veyra 1947). Thus, differences in material culture have been explained in terms of ethnic variation and the replacement of one set of cultural features by another signifies migration and population replacement. Childe (1929: vii, 248) distinguished between traits that had functioned as ethnic indicators and ones that were primarily of technological significance. He equated handmade pottery and burial customs with ethnic identity as these traits persisted relatively unchanged for long periods among particular peoples, whereas new and more efficient tools and weapons would have diffused quickly from one group to another as there were advantages to using them. However, ethnic groups cannot always be recognised from the archaeological record, and the concept of an 'archaeological culture' was a culture historical classificatory device which does not necessarily equate to groups of people, ethnic or otherwise. Furthermore, artefactual materials have been equated with non-material cultural development such as language, religion, rituals and political structure. This has been strongly contested by Processual archaeologists. Furthermore, the nationalistic implications in the works of Gustaf Kossinna (1858-1931; Veit 1989) have led to more cautionary examinations of ethnicity in contemporary archaeology (Díaz-Andreu and Champion 1996; Graves-Brown *et al.* 1996; Jones 1997; Shennan 1989).

As discussed in Chapter 2, the beginnings of archaeology in the Philippines during the culture historical period assumed that culture change was explained by waves of population migrations (Beyer 1947, 1948; Beyer and De Veyra 1947). Pottery was seen as a proxy-indicator for identifying people specifically through decorative style (Solheim 1964a, 2002, 2006), such as red-slip (Bellwood 1978, 1997, 2005). The nuances of Childe's (1929) idea that cultures were comprised of different elements reoccurring together are lost when pottery and decoration are the main focus without considering other elements which comprise a culture such as house forms, burials *etc.* Although culture history continues to have some influence in Southeast Asia, paradigms have changed from culture historical large-scale explanations of the past, to Processual concerns of organisation and systems, and Postprocessual understandings of identity and smaller, local levels of interaction (Cole 2012; Lloyd-Smith 2009).

4.2 Processualism, people and pots

The shift from culture history to Processual archaeology in 1960s Anglo-American archaeology was due to a conscious dissatisfaction with culture history. While culture history attempted to explain phenomena in terms of migration and diffusion, Processual archaeology questioned the equation of cultures with people, and challenged the assumptions of migration and diffusion as causes of change. Processual archaeology explained variation in terms of difference in participation in culture, looking for causes via the process of culture change, and to the system of organisation behind people, rather than culture to explain culture. Flannery (1967: 120) stated that “culture change comes about through minor variations in one or more systems which grow, displace or reinforce other.” Flannery (1972) cites large-scale mechanisms for progress such as irrigation, population growth coupled with advances in agricultural technologies, trade, craft specialisation, symbiosis between contrasting peoples or environmental zones, cooperation and competition, and the integrative power of religions or great art styles, as well as warfare.

Processual archaeology attempted to remove uncritical assumptions and called for scientific methodology including hypothesis testing, with an emphasis on explaining rather than describing (Willey and Philips 1958). Investigations progressed towards scientifically accessible data such as population densities, ecology, economy, settlement hierarchies, and materials analysis. Anthropological archaeology changed the focus of how people were studied (Binford 1962). As part of the Processual 'cultural ecology' approach, which studied how people adapted to their social and physical environments (Steward 1955), ceramic ecology assumed environmental and biological determinants shaped the production of pottery. This was linked this to the broader role of pottery in a culture (Kolb and Lackey 1988; Kolb 1989: 309; Matson 1965; Rice 1987: 314). However, the focus on environmental constraints has been criticised for allowing little room for potters to express their identity (Gosselain 1998: 80; Livingstone Smith 2000: 36). Although research moved away from artefact classification and typology, there were new debates regarding artefact type and new methodologies were developed for handling large corpuses of ceramic data arising

from the large scale excavations in Mesoamerica, Southwestern and Southeastern United States (Gifford 1960; Sabloff and Smith 1969; Smith and Gifford 1966). The development of ceramic types is discussed in Chapter 5.

In British Processual archaeology, the large corpus of Roman ceramics allowed investigations into the organisation of production, exchange and economics (Peacock 1977, 1982; Peacock and Williams 1986). Pottery distribution patterns gave information about the long-distance movements of goods around the Roman Empire as well as differing market roles, in small towns and regional capitals (Tyers 1996). Pottery was considered an indestructible marker or index of the whole trading system (Tyers 1996: 40). It is possible that the contents of the vessels were more important than the ceramic itself, while the vessel was an indicator of status/wealth and demonstrated political links with a region (Fulford 1978; Tyers 1996: xi). During this period, petrography became more widely used. Peacock (1970, 1977) laid out a manifesto describing approaches to processing pottery based on a hierarchy of investigative procedures which included petrological examination for fabric identification. This laid the foundation for petrographic studies in subsequent decades.

While social evolution and social complexity were strong preoccupations for Childe (1925, 1936, 1951), for Processualists these concerns were addressed by the neo-evolutionary models developed by the American anthropologists Service (1962) and Fried (1967). There have been various ways in which scholars have tried to classify developing social groups (e.g. Carneiro 1970; Lenski 1970; Sahlins 1958, 1968). However, the most enduring and contentious has been Service's (1962) presentation of four types of society in order of their evolution from hunting and gathering bands, to agricultural tribes and chiefdoms to ordered states. It is the model of chiefdoms that has had the most impact on the understanding of the development of people in Southeast Asia. The chiefdom was considered a more complex and organised type of society than hunting and gathering bands or tribes. Economic, social and religious activities, particularly the specialisation and redistribution of produce, were seen as centrally controlled. Furthermore, Service (1962) suggested that features of evolving societies included settlement hierarchy, characterised by social inequalities, urbanism,

redistributive trade networks, religious complexity and warfare. Central to these societies were chiefs who had ascribed status, rules of succession and affiliation, and sumptuary rules or taboos which gave them distinctive identities. These unilinear typologies were based on inequality and progressed from simple to complex hierarchical societies as a means to explain social complexity. These arguments are fundamental to this research as these Processual concerns attempt to understand the internal organisation and structure of past societies through hierarchical ordering. This has been challenged by later arguments for heterarchical social structures.

Successive works on chiefdoms found Service's definitions problematic and moved away from functional aspects of chiefdoms such as irrigation and population density (*cf.* Flannery 1972), focusing instead on power, ideological and political strategies, rather than ecology and adaptation. The 1990s saw a shift in approaches to chiefdoms. Chiefdoms were redefined as a polity that organised centrally a regional population in the thousands with some degree of heritable social ranking and economic stratification (Earle 1991a). Research moved towards understanding sequences of long-term change with similarities and differences from region to region (Earle 1991b: 3) with less emphasis on ethnography.

4.3 Chiefdoms in Southeast Asia

Charles Higham, one of the pioneers of Thai archaeology, has used the model of chiefdoms and the body of literature on evolutionary archaeology to discuss social organisation and social transition (Higham 1989). Although Higham revised his work in 2002, his approach in 1989 was to contextualise prehistoric and early historic data within its local matrix, while also drawing on the archaeological theory of the day (e.g. Dalton 1977; Friedman and Rowlands 1977; Peebles and Kus 1977). Higham (1989) characterised early Neolithic communities as small-sized non-centralised autonomous groups without large, superordinate centres, while Bronze Age communities continued to be small, subsisting on rice with no evidence for regional centres or ranked hierarchies. However, it is in the burial record where status differences became apparent. Evidence for social differentiation came from cemeteries and grave goods

where marked status differences were apparent between individuals in communal cemeteries. Grave goods at sites such as Non Nok Tha, Ban Chiang and Ban Na Di, comprised mostly of locally made pottery, clay anvils, and body adornments including shell and stone beads in the form of bracelets, waistbands and necklaces. Exotic marine shells in central Thailand showed that exchange networks existed with coastal communities. The spatial organisation of cemeteries also informed ideas of social difference, for example at Ban Na Di and Non Nok Tha (Higham 1989: 155). While these cemeteries contained differently ranked affiliated groups, they were not yet part of dominant regional centres and were not centralised, and so were not considered to be chiefdoms.

In Southeast Asia, 500 BC is generally given as a time of social and technological change (Bellwood 1997; Higham 1989). Higham (1989: 360) speculates that increased competition and emulation in pursuit of status was a factor in the establishment of centrally based chiefdoms. Societies became more complex in terms of social organisation and there was a trend towards centralisation. Small autonomous Bronze Age communities were incorporated into hierarchical organisations which involved large, regional centres, involved in agricultural intensification, the maintenance of craft specialists and the use of metal to advertise the status of social elites. Higham (1989: 84) considered population growth as a factor for change. He saw the expansion of settlements as resulting from the fissioning of communities as they reached critical population thresholds. This period is characterised by the use of iron (Higham 1996: 310-316). Iron working, for blades and tools, was one of several important variables in the rise of complexity and Higham calls societies at this time chiefdoms with centralisation linked to the emergence of ironworking technology.

Higham's 1989 work attempted to fit Thai data to evolutionary archaeological criteria. However, he does not describe chiefdoms in terms specific to the region or provide descriptions of social structures. There is no discussion of actual chiefs and no chief-like figures from ethnography. Status is known only through burials, but no evidence of actual chiefs has been found and it is difficult to see these social interactions in the archaeological record. By 2002, in a revised version of his work, Higham (2002: 4)

acknowledged that the rapid progress of research had quickly outdated his previous synthesis. Changes in chapter titles show significant shifts in his thinking. The 2002 chapters were no longer organised by social change but now organised by technological-based periodisation. The 1989, Chapter 3 “the expansion of domestic communities” and Chapter 4 “the end of autonomy and the emergence of chiefdoms” became, in 2002, chapters on the Neolithic, Bronze Age and Iron Age. The later edition also saw Higham abandon the term “domestic communities” to discuss Neolithic societies. However, the term chiefdom is still used but not explicitly defined in Thailand. Although he continues to associate them with centralised authority and ranked social structure (Higham 2002: 224).

Overall, the 1989 work is more interpretive. While the 2002 work does not commit to discussing social organisation in detail and shies away from making generalising statements about society, the 2002 work provides more information and data about current research and a basic cultural framework. This allows the reader to determine their own ideas about development, a necessity as current theories quickly become outdated. Even though his 1989 text is outdated, the data remains valid but the interpretations are different. Although chiefdoms and the hierarchical approach to prehistoric Thai society were abandoned, they laid the foundations for discussions about alternative structures of society, as seen in White’s (1995) heterarchy model (discussed below). Ceramics have proved to be a salient artefact in examining heterarchy and hierarchy.

In comparison, a paucity of data in the period around 500 BC has meant that less work has been performed on social organisation in the Neolithic and Metal Age Philippines. The majority of studies carried out have been on the Contact Age from the tenth century AD to European contact in the sixteenth century AD. In these studies, Philippine polities were considered in terms of chiefdoms, as they were conducted under the dominant, processual paradigm (e.g. Hutterer 1976, 1977; Hutterer and MacDonald 1982). It is interesting to note that the proponents of the chiefdom argument in the Philippines are the intellectual descendants of Service and Sahlins, whose students went on to produce the ‘classics’ of chiefdom studies (see Pauketat

2007: 21). Hutterer's (1976, 1977; Hutterer and MacDonald 1982) work in the central Philippines led to the studies by Bacus and Junker (Bacus 1996a, 1996b, 1997, 1999; Junker 1990, 1993a, 1993b, 1994a, 1994b, 2000) who defined chiefdom societies in the Philippines and focused on chiefly pursuits such as "raiding, trading and feasting" (Junker 2000). However, hierarchical thinking has been challenged by subsequent research (section 4.5 below).

4.4 Postprocessualism and identity

By the 1980s, dissatisfaction with Processual archaeology moved archaeology towards its next paradigm. The Processual desire for a more scientific and anthropological archaeology was seen as problematic. On a methodological level, approaching archaeology as a repeatable experiment influenced by the empirical and positivistic natural sciences with the aim of finding generalising laws of human behaviour was criticised, as were the functionalist concern with ecological aspects of adaptation and environmental determinism. Processualism believed that no system can change itself, therefore, change could only be instigated by outside sources. If a system is in equilibrium, it will remain so unless inputs from outside the system disturb the equilibrium (Hodder 1982: 3). In the Processual analyses of society, there was little consideration of human volition, giving little emphasis to individual creativity and intentionality. It neglected interpretations of the material world and its abstract issues such as symbolism and ideology (Hodder 1991, 1992: 11). Factors such as identity, human agency, personhood and gender later became the tenets of Postprocessual archaeology (e.g. Barrett 2001; Dobres and Robb 2000; Fowler 2004; Gilchrist 1991; Gero and Conkey 1991; Meskell 1999, 2001, 2002; Wylie 1992). Processualism led Postprocessualists to be critically self-conscious and self-reflexive as opposed to the Processual emphasis on the objective rigidity of science. 'Postprocessual' refers to archaeology after-processualism, rather than as a unified paradigm. It was a critique and rejection of the rooted ideals of the systems and processes of the New Archaeology. While it has made less of an impact on methods than Processualism, Postprocessualism, as a theoretical critique, has advanced understandings of the way the past is viewed (Hodder 1991). The nature of Postprocessual theory requires

interpretation and self-reflexiveness and a more self-critical approach to archaeological practices in general (Barrett 2001: 141).

Identity now became central to the discussion of people and material culture. However, whether discussing individual or group identity, definitions are ambiguous and hard to find (Díaz-Andreu and Lucy 2005: 1). Social identity is “a characteristic or property of humans as social beings”, while identity “embraces a universe of creatures, things and substances which is wider than the limited category of humanity” (Jenkins 1996: 3). Archaeological discussions of identity have drawn heavily upon theories developed in the social sciences, especially the work of Pierre Bourdieu and Anthony Giddens (discussed below). Identity is always bound within social and cultural definitions, where people have a number of social identities which entail constant negotiation, and organise relationships to other individuals and groups within the social world. It is inextricably linked to the sense of belonging, and is a continual process constructed through interaction between people (Díaz-Andreu and Lucy 2005: 1-2). The social variables of identity such as gender and ethnicity (Graves-Brown *et al.* 1996; Gero and Conkey 1991; Jones 1997; Meskell 2001) have formed the core of much Postprocessual research, as have theories regarding agency (e.g. Dobres and Hoffman 1994; Dobres 2000; Dobres and Robb 2000; Gardner 2004).

There is an on-going effort to broaden archaeology's focus beyond preoccupation with the development of vertical control hierarchies to include less hierarchical, more decentralised or horizontally complex configurations. McIntosh's (1999a) edited volume on Sub-Saharan Africa aims to outline some of the ways that African case material can contribute to archaeological discussions of complexity. Certain recurrent aspects of African society, such as the co-occurrence of vertical hierarchies with multiple, horizontally arrayed, ritual associations and particular notions of ritual power and leadership offer opportunities to reconsider how archaeologists think about power and how it is used in crafting polities. McIntosh (1999b: 23) states that African data do not generally support approaches that seek to explain the origins of complexity by circumscription or to describe complexity primarily in terms of chiefdoms based on economic stratification or control. Furthermore, leadership and power relationships do

not conform to the elite/non-elite dichotomy found in so many archaeological discussions. Rather power relations involve categories of age, gender, descent and association (McIntosh 1999b: 22). McIntosh (1999b: 2) opines that the term chiefdom should never be used in an African context not only because it is laden with unacceptable evolutionary stage implications but also because so many chiefdoms in Africa were, like tribes, the result of colonialism and capitalist penetration. Although terms like 'tribe' and 'tribal' have been rehabilitated in North America where they are considered acceptable when referring to Native American groups, in Africa, the pejorative implications of the terms arising from earlier evolutionary and colonial usage are still considered offensive (McIntosh 1999b: 2). However, McIntosh (1999b: 2) further argues that eschewing the term chiefdom liberates us from the assumptions built into the term, as it equates complexity with the emergence of chiefship.

4.5 The promise of heterarchy

Heterarchy, as a theoretical approach, emerged in reaction to the Processual discourse on the hierarchical arrangement of social groups. Crumley (1979, 1987, 1995) introduced heterarchy into archaeology as an alternative to Central Place Theory (Christaller 1933, 1966; Flannery 1972) by questioning the automatic correlation of social and spatial hierarchies. Crumley (1979: 144, 1995: 2) defines 'heterarchy' in terms of organisational structures where there are two main types; hierarchies and heterarchies. Hierarchies are composed of elements which on the basis of certain factors are "subordinate to others and can be ranked", whereas elements in heterarchies "possess the potential of being unranked, relative to other elements or ranked in a number of ways" (Crumley 1995: 2).

Crumley (1995: 3-4) expressed the dissatisfaction with the band-tribe-chiefdom-state model of sociocultural complexity, but recognised that hierarchies are important and undoubtedly characterises power relations in some societies. Introducing the term heterarchy to the vocabulary of power relations highlights that forms of order are not exclusively hierarchical and that interactive elements in complex systems need not be permanently ranked relative to one another. Heterarchy includes a number of

structural forms, where “elements” as termed by Crumley (1979: 144) are arranged differently in each society. Social segments or units including individuals, communities, households and kin groups may be involved in simultaneous vertical and lateral relationships.

Furthermore, the concept of heterarchy provides new perspectives on the core foundations of archaeology such as settlement pattern data, resource procurement, artefact type distributions, design elements and burial. It also stimulates the critical review of such basic concepts as craft specialisation, the function of central places, the structures of tribes and chiefdoms and the definition of social complexity (Brumfiel 1995: 125). Brumfiel (1995: 128) developing her earlier work with Earle (Brumfiel and Earle 1987), argues that archaeologists probably should not use heterarchy to replace the familiar tribe-chiefdom-states terminology, instead, heterarchy should be used to look at these constructs differently. Pauketat (2007: 63) argues that heterarchical societies are not an intermediate stage of social evolution and that heterarchies are not an explanation, but are dimensions of all social formations that can only be understood by studies of the contingent histories of the people involved.

In Thai archaeology, White’s (1995) paper does not explicitly criticise Higham’s (1989; also Bayard 1992 on complexity) use of chiefdoms in Thailand. However, White does take issue with the hierarchical progression of Service’s (1962) ‘band-tribe-chiefdom-state’ model, and challenges the chiefdom paradigm. White (1995: 102-3) rejects the chiefdom model and argues that the reason for the lack of take up of chiefdoms in Southeast Asia was the paucity of archaeological data and the presence of social formations which do not easily fit into the chiefdom criteria defined on the basis of data from other parts of the world. More importantly, White considers the application of evolutionary models, especially chiefdoms, as inadequate and unsuccessful as evidence for hierarchy has not been identified and models fail to address evidence which is emerging (White 1995: 103). Literature on chiefdoms assumed centrality of economic control, military might and ceremonial legitimacy. However, this is difficult to demonstrate in pre-state societies and economic control and military might were not evident in the region’s early state society (White 1995: 103).

Although data are still sparse in Southeast Asia, White (1995) says that research in the region has moved beyond the pioneering stage and that the emerging data pose a number of challenges to theories of socio-political development. White (1995) proposes that heterarchy, as a central concept, has been missing from the discussion of the development of Southeast Asian society and social complexity. The concept of heterarchy has the potential to challenge conventional archaeological wisdom that stresses predictive and deterministic models of culture change and allows Southeast Asian data to develop dynamic conceptual frameworks rather than shape the region's development to fit pre-existing models (White 1995: 103). Table 4.1 shows social and artefactual markers of hierarchy and heterarchy specific to Southeast Asia.

Markers of hierarchy	Markers of heterarchy
Stratified/ranked social structure e.g. chiefdoms Large permanent settlements/dwellings Monumental architecture Rich tombs/elite burials Centralisation/regional centres Craft specialisation Redistributive trade networks Warfare	Unstratified/unranked social structure Social vertical and lateral relationships Cultural pluralism Decentralised craft specialisation Flexible social status Low levels of conflict

Table 4.1 Social and artefactual markers of hierarchy and heterarchy specific to Southeast Asia, mostly from Thai data. Hierarchical markers are often absent in heterarchical societies.

Elite manipulation and control of craft production have often been regarded as a key factor in the development of political centralisation (White and Pigott 1996: 151). However, in Thailand, no evidence has been found to suggest that regional elites had centralised political power or controlled the production and distribution of commodities. White considers that craft specialisation, distribution and long distance exchange were decentralised and craft specialisation was sustained in the absence of elite control and was not the basis of political power (White 1995: 107; also Pigott *et al.* 1997; White and Pigott 1996). Decentralised craft specialisation is one aspect of heterarchy in Southeast Asia. White (1995: 104) proposes four broad patterns of heterarchy which are salient to the social development in the region. These are cultural pluralism (1), dynamics of indigenous economies characterised by specialised

craft production (2), flexible social status (3) and alliance strategies of socio-political units which manifest in low levels of conflict (4). This is supported by archaeological data from between 2000 and 200 BC from sites which have patterns that are suggestive of socio-cultural developments, as well as historical and ethnographic data. White (1995: 105) argues that the patterns are heterarchical by stressing flexibility in status definition, political relations and lateral differentiation in social and economic realms.

Sociologically, cultural pluralism can be defined as “different groups in society keeping their distinctive cultures while coexisting peacefully with the dominant group” (Andersen and Taylor 2006: 291). Although dominant groups may not be present, cultural pluralism is evident in the site to site variability of material culture within proximate regions in Thailand. As a broad pattern of heterarchy, White (1995: 105) suggests that this variability is indicative of small localised cultures which not only pervaded the material culture but also rituals and social practice. This is particularly apparent in the ceramics evidence. White (1995: 105) states the archaeological assumption that two proximate sites would share the same cultural tradition. However, there are significant differences in pottery sequence between Ban Chiang and Ban Na Di which are coeval and c.20 km apart. The two cemeteries dated from the early to the middle of the first millennium overlapped, however, although the sites shared one highly distinctive rare vessel type, the pottery had very few stylistic, morphological and technological similarities. At Ban Chiang, ceramics were tempered with rice and were slab built. The upper layers were characterised by the red-on-buff painted ware for which the site is best known. The ceramics at Ban Na Di were tempered with grog and manufactured using a mould and coil technique (Vincent 1984; White *et al.* 1991; White 1995). This difference suggests that although these two centres were contemporary and spatially close, Ban Chiang and Ban Na Di had two different pottery traditions during this time.

Burial rituals also differed at both sites. Although ‘religious complexity’ is cited as a hierarchical marker (e.g. Service 1962), complexity of belief and funerary practice is salient in heterarchical societies. Grave contents and organisation differed in the range

of types and treatment of ceramics, animal remains, shell ornaments and figurines. At Ban Chiang, the graves were characterised by skeletons overlain by sheets of sherds from deliberately broken pots. When reconstructed, these vessels revealed several examples of the same type per grave. In contrast at Ban Na Di, some vessels were broken, some were intact, and a variety of vessel forms were used, rather than multiple examples of the same form (Vincent 2003a). White (1995: 106) asserts that these differences are not due to cultural isolation because of evidence in the area of long-distance trade of shell, stone and metals. The long distance cultural connections are evident in the uniformity of metal technology. Communities participated differentially in trade of exotic and local items, where individual communities may have placed different values on particular exotic artefacts, which White calls a “heterarchy of values.”

This localised variation is evident across Mainland Southeast Asia, especially during the Metal Age where there was differential participation during the Bronze Age which may account for the varying incidences of metallurgy in the region (White 1995: 106). This distinct regionalism expressed in craft production was created without the centralised control that is usually associated with social complexity and population growth. However, although there is significant differentiation in each cemetery with varying levels of grave goods conveying wealth, this may not actually be an indicator of hierarchical status differentiation. Variation in burial practice also implies cultural pluralism between sites and cultural differences between communities.

White’s (1995) seminal paper paved the way for social organisation in Bronze Age Southeast Asia to be discussed in terms of heterarchy (*cf.* O’Reilly 2001, 2003; Onsuwan 2003; Onsuwan Eyre 2010). Following White, O’Reilly (2003) applies a heterarchial model to Bronze Age Thailand but discusses its erosion during the transition to the Iron Age as there is growing evidence of burgeoning entrenched hierarchical organisation (*contra* Onsuwan 2003: 8). O’Reilly (2003: 13) argues for centralisation of ceramic production, represented by the Phimai black pottery tradition and an increase in craft specialisation. The appearance of iron and Phimai-tradition pottery was associated with the expansion of settlements throughout the Phimai

alluvial plain and the establishment of a settlement pattern. The Phimai tradition remained fairly stable in terms of the technology employed in pottery manufacture over a long period of time, possibly 1200 years, with latter dates ranging from c.300-600 AD (Welch and McNeil 1990: 121; also Talbot and Janthed 2001). Thus, the uniformity of the Phimai black style over a large area conforms to the characterisation of specialist produced goods. O'Reilly (2003: 14) attributes this change in social dynamic to the proliferation of iron technology corresponding with an increase in production and possibly agricultural surplus. An increase in population and competition for resources also puts societies under scalar stress. It is possible that heterarchy was more suited to small scale societies. However, when populations expand and more technological innovation arise, social structures change. Cultures become less pluralistic and cultural objects more standardised, crafts production becomes centralised and there is often a surplus of goods, because of trade or exchange, and there is more evidence of conflict (*cf.* Johnson 1982; McIntosh 1999b: 12).

4.6 Critiquing heterarchy

Social developments in Southeast Asia are distinctive and different to those in other parts of the world (*cf.* Muhly 1988). Heterarchy has been used to refine theories on formation of states and the development of social complexity. However, heterarchy should not be advanced at the expense of hierarchy. As previously stated, hierarchies and heterarchies can co-exist, heterarchy does not negate hierarchy and heterarchies may have some hierarchies within its own structure. The introduction of heterarchical thinking to Southeast Asia provided a fresh perspective on the concept of hierarchy and complexity. However, in the subsequent archaeological literature, there has been little take up and it has not progressed as an archaeological concept. When social structures are fluid and flexible and conventional evidence for investigating social complexity are not recoverable or evident in the archaeological record, it is much harder to argue for heterarchy. A further problem is whether heterarchy has been identified as anything other than a lack of physical/material evidence for hierarchy. Because heterarchy is so heterogeneous there are no criteria for what accounts for

heterarchy and no sufficient models. It is unlikely that a society will be found which perfectly matches a model of heterarchy (Small 1995: 71).

Although the concept of heterarchy made it possible for White to interpret evidence which Brumfiel (1995: 125) says had “previously eluded understanding”, Onsuwan (2003: 9) argues that White does not explore the repercussions of the patterns for prehistoric settlement. Furthermore, Onsuwan Eyre (2010: 44) argues that heterarchy is not fully developed and in many ways is still in the investigative stage. Heterarchy as a framework was appropriate for the data found in Thailand. However, this model cannot be carried over wholesale into the Philippines. However, with White’s (1995) four broad patterns of heterarchy, cultural pluralism is the most visible and significant feature which has the potential for explaining variability in the ceramic assemblage and understanding localism in the Dewil Valley.

More recent research by Filipino archaeologists such as Barretto-Tesoro (2007, 2008) focuses on earthenware pottery and ethnographic data and uses an agency based approach to understand social relations in Calatagan, northern Luzon, during the fifteenth century AD and the impact that external trade had on the Philippines. Rather than considering late Philippine society as hierarchical, Barretto-Tesoro (2008) merges heterarchy with agency theory as an analytical tool to show how people established their identities and status through routines such as pottery production and participation in raiding, trading, feasting and rituals. Thus, heterarchial structuring continued to be present in the later periods. By looking at social relations she also focused on concepts specific to Philippine culture such as the value of *utang na loob* (Tagalog: ‘debt of gratitude’) to structure society and to describe reciprocity, social and ritual transactions (Barretto-Tesoro 2008: 40). Mijares (2003) used heterarchy to discuss the social complexity of pre-Spanish Ivatan in terms of settlement patterns, mortuary practices and craft specialisation. Household level pottery production, in addition to the settlements and burials, exhibited flexible heterarchy. Mijares (2003: 74) proposed that leadership was probably kin-based or low-level chiefdoms. However, it was during the Contact Period that heterarchy started to erode. Foreign trade developed chiefdoms, where chiefs or *datus* developed their centre and

controlled long distance trade, as well as the choice of goods to be circulated. This in turn brought more political power and increasing evidence of violence through raiding. Increasing levels of social hierarchy and social complexity were demonstrated in the settlements and in the status symbols and wealth objects in burials.

This research will investigate what evidence exists for hierarchy and heterarchy. In the Dewil Valley, it is unlikely that evidence for strong hierarchical markers, such as ranked society, settlement hierarchy or significantly differentiated burial practices will be found. It is further unlikely that evidence for chiefdoms will be present. However, this research considers how pottery practice can contribute to understanding social organisation when data are scant. The relevance of cultural pluralism as a key tenet of heterarchy will be examined in the context of Philippine data.

4.7 Recent studies in ceramics and technological practice

This section examines recent archaeological studies about people and their ceramic practice. Studies conducted in the wake of Postprocessualism need to be mindful of previous archaeological paradigms agendas and methodologies. Some studies have moved towards examination of the micro-phenomena or 'cultures in miniature' as represented by technical systems (Øye *et al.* 2010: 5). Gosselain (2000: 187) argues for more sophisticated ways of interpreting material culture to access the dynamic nature of processes through which individuals construct, maintain, and negotiate their identity. These more recent studies offer a more nuanced vocabulary and methodology for discussing people who cannot be identified directly and so can be applied to Ille. This section focuses on the movement away from decoration as an indicator of people and towards the importance of technology for understanding technical and social processes in the construction of pottery. Technology will be used as a means of assessing people through their communities of practice and as an expression of identity.

Under the auspices of Processual archaeology, style was often equated with decoration where stylistic patterns were reflections of social organisation (e.g. Deetz

1965; Longacre 1970). The discussion of style has also led to a focus on decorations as imitable: where emblems or iconographic styles can signify social relations through emulation or affiliation (Wiessner 1984) or shared mortuary symbolism (Bacus 2003, 2004). However, designs and patterns are subject to change. The concept of style has been much debated (Carr and Neitzel 1995; Dunnell 1978; Hegmon 1992; Rice 1996; Sackett 1977, 1985, 1990; Wiessner 1983, 1984, 1985, 1990). Dietler and Herbich (1998: 239) argue that Processual interpretations suffered from a number of methodological and theoretical problems. The passive reflective view of style gave a static and stereotypical view of the process of craft learning and a limited understanding of its social context and relationship to material culture patterning. The focus on decoration was limiting and did not provide a means to look at the social context.

These problems can be seen in Solheim's almost sole focus on decoration as the primary indicator of a pottery tradition. However, there was a movement towards Lechtman's (1977: 6) concept of "technological style", where technology could only be understood within its social and cultural context. Although this work was written within a Processual framework which examined the rules behind behaviour (Lechtman 1977: 12), Lechtman's work laid the foundation for exploring the social role of technology and recognising technology in its own right. Stark *et al.* (1998: 212) argues that there are advantages of studying technology over style and decoration as "technological style is more resistant to change than stylistic variation via decorative parameters, because stylistic variation does not significantly alter the manufacturing process". Thus, technology rather than style became a better means for examining people and ascribing identity. In addition to technological style, there are multivocal approaches to technology, including technological choice (e.g. Gosselain 1998; Lemonnier 1992, 1993; Sillar and Tite 2000) and practice and agency theory (e.g. Dobres and Hoffman 1994; Dobres 2000; Dobres and Robb 2000; Gardner 2004).

The technological approach originates from the French tradition of *technologie* and the *chaîne opératoire* or 'operational sequence', pioneered by André Leroi-Gourhan (1911–1986) as the method for studying cognition, technical choice and techniques of

the body (Audouze 2002; and Ingold 1999 on Leroi-Gourhan; Lemonnier 1989, 1992) and the North American equivalent Anthropology of Technology (Pfaffenberger 1988, 1992; also Miller 2007). The *chaîne opératoire* approach aims to reconstructs all technical stages of production showing the dynamic link between stages. It encompasses the social factors where it is possible to recover technological choices as well as sequences of gesture (Audouze 2002; Leroi-Gourhan in Ingold 1999). Examinations of motor habits or 'psycho-motor schemata' (Gosselain 1992) have contributed to the understanding of learning traditions and how habits are acquired during the learning process, which become embedded and may be difficult for individuals to change. However, Creese (2012) acknowledges that they can change over time. Milnar (2001: 375) argues that specific motor conventions may also be used to define the presence of one or more communities of practice. Thus, technology is a product of social practice.

Subsequent work by Lemonnier (1989, 1992, 1993) developed an understanding of the relationship between technology and society, showing a *chaîne opératoire* cannot operate independently of the society that produces it. From a social constructionist point of view, Killick (2004: 574) argues that technologies are embedded within social relations, and thus the study of technological *chaîne opératoires* can potentially be an important source of evidence for social beliefs and practices. Dobres (2000: 167) states that *chaîne opératoire* research provides detailed and quantifiable data on sequential technical operations of raw material transformation, on the relationship between design, raw material and end product. It also provides data on shared and contested community, regional and cultural technical practice (see also Dietler and Herbich 1989, 1998; and Van der Leeuw 1993, 1994 on ceramics).

Although archaeology has focused on material culture and technology as an end product, aspects of technology and its process can be found in pre-manufacture stages such as clay selection and the collection of other raw materials. This has resonances with the idea of 'ceramic ecology' where ceramic production was essentially determined within the context of the potter and how production was influenced by their environmental setting (Arnold 1974, 1975, 1985, 1993, 2005; Matson 1965). In

analysing the Ille assemblage, this research looks at not only the ceramic attributes which constitute a final product but also the entirety of production, including the pre-pottery process as a result of the social learning process and wider social actions.

Technology has become central as a means of discussing people and identity. Technology also links to practice theory which is a useful theoretical concept for discussing people. Bourdieu's (1977, 1990) practice theory and Giddens' (1979) theory of structuration, both "outline the dialectical relationship between *agent*, a bounded but not determined individual who can alter structures through practice (or praxis) and *structure*, the larger, more enduring settings and conditions that result from the ongoing relationships between individuals" (Dornan 2002: 305). Pauketat (2001: 79) summarises both theories as stating that "all people enact, embody, or re-present traditions in ways that continuously alter those traditions".

Bourdieu's central concept is *habitus*, a product of history that produces individuals and collective practices that transform and reproduce the culture around them. His theory is particularly relevant to archaeology because he develops his theory in relation to material culture and the use of space (Hodder 1991). It is through the everyday *habitus* of artefact making that technical activities become important means for expressing and materialising larger cultural epistemologies, ontologies, identities and differences (Dobres 2000: 139; also Dietler and Herbich 1998; and Hegmon 1998). Thus, tradition, change and variation in material culture are the forms of practice most visible in the archaeological record.

In terms of technology and practice, Ingold (1993: 438) argues that techniques are active ingredients of personal and social identity and the very practice of a technique is itself a statement about identity. However, practice theory has also been used by archaeologists to discuss the importance of social technology. Technology is not just the process of making things. Dobres (2000) goes beyond how artefacts are made and used to concentrate on their social relationships and communities of practice. Dobres (2000: 96) argues that technology is the "social practice and the process-*ing* of the material world that is *not* reducible to the activities of artefact making and use"

(Dobres 2000: 129). This is based on three fundamental claims. Firstly, technologies are meaningful acts of social engagements with the material world that express world views; secondly technological practice 'produces' not only things but also personal, practical and cultural knowledge; and finally technologies are fundamentally about people, mindful communities of practice, and social relations of production (Dobres 2000: 96-97).

4.8 Key concepts: learning traditions, learning networks and communities of practice

A tradition is the transmission of customs or beliefs from generation to generation. It is also an established artistic method or style and subsequently followed by others (OED 2013). In northern Palawan there is a wide overarching ceramic tradition, with distinct technology and style, usually used for mortuary purposes. This research suggests that within the wider ceramic tradition, there are different learning traditions between groups of ceramics at Ille. The learning traditions show technological difference, based on difference in practice during the production sequence which can be observed and measured. Learning traditions show ceramics which have correlating attributes. This may be in fabric, form, decoration or firing techniques. These learning traditions are carried out by communities of practice; more explicitly, potters who are organised and reproduce their culture in ceramics for social purposes, in this case, their mortuary practice as a means of expression.

It is in learning networks where the transmission of knowledge takes place, usually from generation to generation, between family members and within social groups through structures like apprenticeships (Gosselain 1998, 2000; Wendrich 2012a; Wallaert 2012; Hegmon 1998 for 'learning contexts'). However, these traditions are not simply transmitted vertically e.g. from parent to child and the craft is not practiced in isolation, but it is transmitted both vertically and horizontally through peer groups that may include siblings, friends and neighbours as part of a community of practice (Gosselain and Livingstone Smith 2005: 42). Along with this, Livingstone Smith (2000: 22) states that the mobility of the artisans also affects the distribution of technical

behaviours. As most artisans practice their craft as they were taught, these behaviours become embedded in practice, it is likely that they may be reluctant to change the operating process they took years to master (*cf.* Longacre 1981; and “community of potters” Arnold 1983, 1984, 1993). Thus, Livingstone Smith (2000: 34) makes the link between the production of pottery within a community and the social identity of the practitioners. Gosselain (1998: 91) argues that technical choices appear as a result of a learning process where potters select and transform the materials they have been taught to do, not randomly, being neither keen to modify their habits nor interested in other ways of doing it which Dietler and Herbich (1994: 465) term “socially acquired dispositions”. Gosselain (1998: 78) suggests that these choices relate to natural pressures but also to symbolic, religious, economic and political ones which can be associated to aspects of social identity. In archaeology, groups of people often have a shared identity and an expertise in a particular domain. Milnar (2001: 376) argues that understanding learning frameworks is important as it permits archaeologists to identify an important potential source of variability in their assemblages and to identify multiple communities of practice.

Coined by Lave and Wenger (1991; see also Sassman and Rudolphi 2001; Wenger 1998; Wenger *et al.* 2002), the origin and primary use of the concept ‘community of practice’ has been situated in learning theory. Communities of practice are groups of people who were linked by their shared practices and who deepen their knowledge and expertise in this area by interacting on an ongoing basis (Lave and Wenger 1991: 4). Learning develops through social interaction and increases participation in communities of practice and members define their identity through participation in shared practices. Lave and Wenger (1991) assume that learning involves novices becoming members of a community of practice through legitimate peripheral participation, mastering knowledge and skills through acquisition of particular knowledge and engagement in practice moving from the periphery of involvement to full mastery. It is communities rather than individuals that are the units of learning (Lave and Wenger 1991: 49). It is also possible that more than one community of practice can exist within a social group. However, the degree to which this can be assessed in the archaeological record will be discussed below.

The term community or social group is appropriate to this study. A community is defined as a group of people living in the same place or having a particular characteristic in common (Oxford English Dictionary 2013). In *The Archaeology of Communities* (Canuto and Yaeger 2000; also Eckert 2008: 2; Hegmon 2002), in addition to referring to where people reside, a community assumes a group of people who interact socially, are conditioned by the assumption of physical distance and reconstructed by similarities in material culture. Communities must be viewed as ephemeral and ever-emergent without assuming that communities are static (Yaeger and Canuto 2000: 8). However, there are methodological problems with recovering communities which will be taken into account; the correlation of spatial and social units; scale and sampling, the recognition of interaction and the question of palimpsests (Yaeger and Canuto 2000: 9). Communities of practice created through the manufacture and variation of ceramics can be identified in the archaeological record.

These theories on communities of practice are starting to be used in Southeast Asian archaeology. Szabó (2005) examines shell-working communities of practice in Island Southeast Asia and the western Pacific that have both strong spatial and diachronic dimensions. These social groups have a shared outlook and a set of practical encultured dispositions regarding particular technological practices. The focus is not on who people *are*, but what they *do* (Szabó 2005: 82). Szabó (2005: 355) finds that a major shell-working community of practice can be observed in Palawan. In particular, the shell artefacts at Ille Cave have the greatest diversity of techniques and working materials which have parallels elsewhere in Palawan (*cf.* Fox 1970). The Palawan shell-working community of practice was linked by a variety of shell artefacts including *Conus* spp. rings, *Melo* sp. scoops, *Turbo marmoratus* spoons, shell lingling-os, *Tridacna* spp. adzes, as well as a variety of shell beads. Some of these artefacts, such as the *Turbo marmoratus* spoons and shell lingling-o have parallels outside of Palawan (Szabó 2005: 355). Over a wider area, the Lapita samples studied show clear and strong relationships to one another. In particular, *Conus* spp. working showed strong connections and very little variability from site to site, and the production of most of the different classes of *Conus* spp. artefacts were linked by a single, strongly-patterned

chaîne opératoire and associated set of techniques (Szabó 2005: 354). Overall, Szabó's research suggests widespread relationships in shell-working practices across the Island Southeast Asia and western Pacific area that have a considerable time-depth.

Cole (2012) asks whether a 'communities of practice' approach can be used to frame a practical methodology for the exploration of group identity at the Niah Caves, Borneo. Cole used the earthenware assemblages as a chronological indicator, and compared the ranges of practice on a chronological basis to provide an overview of continuity and change in mortuary and ritual practices over time. The groups of people who performed mortuary practices at Niah were conscious members of a community of practice whose expertise was focused around the performance and maintenance of mortuary practices. Cole identified the existence of a single undifferentiated group identity in the late Neolithic. By the advanced Metal Age, two separate but co-existent groups were indicated with differentiated mortuary practices but linked by the rite of collective burial suggesting that both groups subscribe to an identity and belief systems organised at a Niah-wide level or above (Cole 2012: 238). Cole finds that a community of practice approach is an effective tool for identifying both unified and multiple group identities, however, the weakness of this approach is in the nature of the group or groups that are identified. The approach does not of itself offer insights into any relationships between the groups in terms of social stratification relating to class or status, or horizontal social affiliations such as caste or religion. The approach cannot discern whether the two populations are variants of the same group or unrelated groups (Cole 2012: 244). Cole argues that additional approaches are needed to discern the nature of the groups they identify.

The communities of practice in this research will be based specifically on their ceramic practice identified by similarities in technology, and the physical distance within the Dewil Valley. By examining the process or *chaînes opératoire* and variation across the Ille and El Nido assemblages, technology as well as style, will be used to identify whether a distinctive ceramic practice existed and to assess the extent social boundaries can be recovered. This is a means for discussing the communities who used the Dewil Valley, and whether a sense of identity is expressed in the ceramics

themselves. Social practices relating to the ceramics will also be considered, for example their presence in as part of the burial rituals and the role ceramics play in this and what it tells us about the communities.

4.9 Pottery in practice

In wider archaeology, Olivier Gosselain and Alexandre Livingstone Smith undertook innovative research by carrying out comparative studies of traditional pottery production systems in several African countries. Multiple aims included reconstructing the *chaîne opératoire*, examining the cultural meaning of variations in pottery and contributing a more detailed and practical approach to social identities (Gosselain 1998, 1999, 2000). With a focus on micro-phenomena, their research expounds the necessity of examining more systematically the relationships between people and technology (Livingstone Smith 2000: 23). Gosselain (2000: 209) argues for shifting archaeological attention away from Processual assumptions about determined environmental structures or constraints, towards actual processes of enculturation. Thus, pottery technology is seen as the locus of stylistic expression (Gosselain 1992: 559).

The study of Bafia potters, in Cameroon, demonstrates how the shaping of ceramics, rather than the pattern of decoration, has been the prime indicator of learning traditions and identifies them with a community of practice (Gosselain 1992: 582, 1999). It is a better indicator of identity because surface decoration can be considered superficial. Gosselain (2000: 191) argues that the visual qualities of decorations render them especially likely to be ascribed aesthetic or symbolic values and thus consciously borrowed or manipulated. They are imitable, technically malleable and subject to change in response to contacts with other individuals, economic concerns or other influences (Gosselain 2000: 193). These represent temporary facets of identity while shaping is especially resistant to change (Gosselain 2000: 191). Gosselain (1992: 582) argues it is unlikely that learned gestures, postures and motor habits will change after apprenticeships (*contra* Creese 2012). It has an intimate connection to the spatial

development of learning networks, and becomes an embedded, rooted and enduring facet of identity (Gosselain 2000: 209-210).

These studies give examples of how other ceramic attributes beyond decoration can contribute towards identifying communities of practice and identities of social groups. Although Gosselain (1998: 92) points out that other stages of the manufacturing process such as clay processing, firing and post-firing turn out to be poor cultural markers for identifying communities of practice, because of the variation in fabric at Ille, the paste preparation process will be considered in detail to examine the differences in pre-production and production process.

Gosselain and Livingstone Smith's work have provided careful examination of traditions and procedures at different levels of the *chaîne opératoire* and show that technical behaviours constitute full culture reproductions rather than adaptation to environment and functional pressures (Gosselain 1998: 99). These behaviours are embodied by individuals through practice as part of their *habitus* and expressions of their community of practice. This is in line with Lemonnier's (1992, 1993) assertion that a *chaîne opératoire* cannot operate independently of the society that produces it. Although these works are laudable and deal with the micro-phenomena of pottery production not usually discussed in archaeology, there are difficulties with this approach and problems when specifically applied to the Ille assemblage. These studies have their basis in ethnography and not archaeology. There are problems with extrapolating and applying phenomena to past times. Although they were able to ask their subjects directly about their methods of production, identity and affiliations and symbolic structures, individuals were not always able to express why they do something because it is part of their habit.

Milnar (2001: 370) argues that archaeologists still know little about how members of a community actually acquired knowledge and skill. Even less well understood is how and why the specific details of a suite of technological or design knowledge either persevered or changed over time. Archaeologists assume people learnt through apprenticeships within their community (Wendrich 2012b: 2). However, we cannot

know the structure or process of learning for apprentices or whether learning was observational, tacit or direct (Miller 2012). In the Philippines, we do not clearly know who the 'apprentices' were or if there were any gender distinctions (*cf.* Cole 2012). Longacre's (1970, also 1974, 2004) ethnographic study of the Kalinga, northern Philippines, shows clear mother to daughter transmission but we cannot be assured of this in Palawan.

Micro-phenomena are not easily recoverable in the archaeological record and thus these questions are difficult and under examined in contemporary archaeology. These studies open up dialogues for exploration when applied to other parts of the world in different times and will inform thinking on the *chaîne opératoire*, micro-processes and practice. Furthermore, these theories provide a vocabulary for discussing people in the past and are especially useful when discussing the inhabitants of the Dewil Valley as identities are unknown.

4.10 Summary

This chapter has discussed the development of the discipline and how the study of people has changed, from 'cultures' to 'communities of practice', and from hierarchies to heterarchies. The purpose of the studies discussed in this chapter were two-fold; firstly to provide a framework for discussing the immaterial aspects of people such as communities and identities, and secondly to highlight the key role of technology in understanding ceramic practice. Overall, the studies have shown how ceramics have been used to identify people and their practice and they provide a vocabulary and methodologies which will be used in this research. As stated, it is difficult to directly identify the people who used Ille Cave and inhabited the Dewil Valley. However, this chapter has shown how people can be discussed in terms of social groups and communities of practice. It is communities of practice that will be the most useful term for discussing people at Ille Cave, as they can be identified through the different learning traditions evident in the earthenware assemblage.

The focus on technology has been significant. As discussed above, technology is not just the process of making things but encompasses its social component (Dobres 2000). It is this social component which allows archaeologists to access people and their social practice from pottery. Decoration as a means of identifying people has previously dominated archaeology and is still prevalent in Southeast Asia (Chapter 2). The studies above demonstrate that technology, technical style and decorative technique as an action, are better indicators for establishing communities of practice and cultural identity. Furthermore, an examination of learning tradition allows archaeologists to identify multiple communities of practice and variability in their assemblages. This can be seen in the different processes within the *chaîne opératoire*, such as clay and temper selection and shaping. Each stage corresponds with a technological choice which may account for variation in assemblages. This research will examine aspects of the learning tradition which are 'determined' by access to resources which are dependent on environmental factors and can be seen in provenance and paste preparation; 'imitable' through conscious interaction and influence, which may be seen in attributes such as decoration or forming; and 'embedded' as part of the *habitus* and the unconscious part of technological practice which as aspects of micro-phenomena which can remain unnoticed.

This thesis focuses on the evidence available to investigate the processes and practices of pottery production and consumption. By drawing on frameworks which allow a discussion of people through pottery practice, this research examines aspects of the *chaîne opératoire*. It identifies technical choices by close examination of the fabric and forms to show if more than one learning tradition is present which could signify more than one community of practice. Variability in behaviours during the manufacturing process will be reflected in the final product where variation can be seen in the ceramic assemblage and possibly show the different learning traditions of different communities of practice. Methodologies for examining technological types, choices and variation, and for identifying the *chaîne opératoire* are discussed in the following chapter.

5. Methodology

5.1 Introduction to methods

Chapter 2 addressed ceramic studies in the Philippines, focusing on how archaeologists have differentiated pottery types and used them as an indicator of migrating groups of people (Solheim 1964b). Solheim's method of analysis was built for descriptive purposes based primarily on observations about surface treatments and form. In particular, decorations of the Sa Huynh-Kalanay pottery tradition were used as a fundamental unit of analysis, and as a means of recognising and categorising pottery, but without detailed consideration of other attributes. It was previously thought that the Ille assemblage was part of the Sa Huynh-Kalanay pottery tradition (Archaeological Studies Program [ASP] 2005-2006; Paz and Ronquillo 2004; *cf.* Solheim 1964a). This research examines that hypothesis. This study moves beyond using the dominant model of pottery decoration as the primary indicator of social groups, and instead focuses on technological practices as a whole. Chapter 4 discussed theoretical frameworks for discussing groups of people who cannot be directly identified. Archaeologically, people can be conceptualised and discussed in terms of social groups and communities of practice, while ceramic technology enables a consideration of people through their learning traditions. This research seeks to examine the people who used Ille Cave and the Dewil Valley through an analysis of practices used to make the pottery, and thus seeks to identify and differentiate the range of learning traditions and communities of practice expressed through variations in pottery technology in the north Palawan region.

The methods in this chapter were developed in relation to previous work in the Philippines (Chapter 2), the specific nature of the material and context of Ille Cave (Chapter 3) and to address the research questions (Chapter 1). The intention of this research was to begin by using the earlier systems of using form and decorative traits

to classify ceramics, and then reassessing this by evaluating how they relate to the techniques of manufacture and fabric groups that also reflect learning traditions. In order to achieve this, a research methodology was devised to identify the technological variation within the assemblage and assess whether these differences relate to distinct processes of manufacture. Therefore, ceramic practice is used as an indicator of different learning traditions. This was done by examining macroscopic and microscopic attributes from the technological variants, and grouping correlating attributes into wares and types to distinguish learning traditions and to enable comparisons across ceramic datasets. Technological variation also incorporates surface decoration but considers it in the context of active decorative technique. The ceramics were put into their stratigraphic context by development of the Harris matrix to give chronological control. This also allows the pottery to be analysed in relation to associated burials, funerary practices and other material culture excavated at the site so that the pottery can be put into the social context, allowing the understanding of activities within the cave and potential uses of the pottery.

This chapter discusses the philosophy of typology and the difficulties with the typological process drawing on the debates in wider archaeology and those specific to Southeast Asia. The chapter then introduces the suite of methods used to analyse the ceramic dataset and assess pottery technology in order to build wares and types as means of differentiating learning traditions. The following section discusses methods for ceramic quantification and the different levels of sampling for this research. The ceramic fabrics, including examination of the aplastic and organic temper, were evaluated by macroscopic analysis, optical microscopy, stereoscopy and scanning electron microscopy. Macroscopic analysis was used to examine form, decoration and surface treatments enabling the determination of wares and types. Establishing ceramic types enables the encoding of difference that can be compared. These methods contributed to the reconstruction of the *chaîne opératoire* and technological processes for pottery production. Attempts at dating were undertaken by Accelerator Mass Spectrometry (AMS) and Optically Stimulated Luminescence (OSL) and through the use of site stratigraphy to inform pottery chronology. This layered and multiple technique methodology provides a means of understanding the ceramic assemblage

and provides a range of data to identify variation and technological, as well as social, processes which contribute to the various learning traditions represented in the pottery at Ille Cave.

5.2 On the philosophy of typology

An essential part of this research to understand the ceramic assemblage is to establish a typological process to create wares and types based on correlating attributes. A typology may ideally be a “particular type of rigorous classification, in which a field of data are divided up into categories that are all defined according to the same set of criteria, and that are mutually exclusive” (Adams 2001: 1962). However, in practice the creation and use of typologies are ambiguous and can have overlapping boundaries. The definition of wares and types will be developed using the long tradition of archaeological discussions on classification and in the context of how wares and types are used in Southeast Asia.

5.2.1 Classification and the typological process in archaeology

In archaeology, classifications have been the means by which a degree of order is imposed on artefacts and partitioned to make the assemblage manageable. Classifications are based on common features or degrees of similarity and their significance is interpreted culturally (Rice 1987: 274). Adams (2001: 1964) states that it is the researcher’s purpose that determines which variables and attributes are selected in making a classification. For this research, the creation of wares and types was necessary as a means of identifying and describing variation, comparing types within the assemblage and for comparing assemblages in the region. Thus, classifications provide a basic vocabulary for discussion that can be applied consistently (Adams 1988: 51).

Approaches to typologising have varied and have followed paradigmatic shifts from Functionalist to Processual classifications. In particular, the development of the type-variety system used by Processualists provided useful methods for organising large corpuses of ceramic data which gained widespread acceptance in the Southwestern

and Southeastern United States, and Mesoamerica (Gifford 1960; Sabloff and Smith 1969; Smith and Gifford 1966). However, the practice of typologising has been problematic. Debates have raged over whether types are inherent in the data and existed for the maker, or whether they are artificial and imposed by the archaeologist (see Deetz 1965; Ford 1954; Hill and Evans 1972; Rice 1987: 283; Spaulding 1953).

Ceramic assemblages vary vastly and typologies and methods for sorting, are specific to each assemblage. Rice (1998: 67) acknowledges that classification is essential for archaeologists but highlights what is not agreed on is “how to do it”. Although there have been calls for systematic approaches to archaeological classification and building relationship between typology and theory (Vierra 1982), there is no consensus for typology as a method and a basic methodological stance has been contested (Brown 1982). ‘One size’ does not ‘fit all’ when it comes to the practical application of theory to ceramic typology. These issues are yet to be resolved.

Ceramic typology can be subjective and prone to research bias. Two researchers may not use the same system (Rice 1998: 67) and typologies might require arbitrary judgement that cannot be translated into precise type definitions or are hard to quantify (Adams 1988: 45). It is acknowledged that intuition is a strong guiding factor in the sorting process and the determination of types (Adams 2001; Rice 1998; Sinopoli 1991: 49). Rice (1998: 68) states that the “basis of typology is the *perceived* similarities and differences within the collection, with the attributes being described after the classification”. Thus, Adams (2001: 1965) argues that “typologies develop dialectically through a feedback between object clustering and attribute clustering”. ‘Dialectical feedback’ was used as a tool in this research. Wares and types were preliminarily grouped together based on similarities of attributes. Types were reassessed throughout the research to ensure that they remained congruous.

Every type has members, a description, a definition and a name (Adams 2001: 1964). The characteristics of the entities to be classified or identified are usually called attributes. An attribute is a property, characteristic, feature or variable of an entity (Rice 1987: 275). Artefact types are never designated on the basis of *all* their attributes

as to do so would result in a typology in which every single object was a separate type. Rather certain variables are selected out as a basis for the differentiation of types while others are ignored (Adams 2001: 1964). Adams (1988: 51) states that two of the most common basic purposes are descriptive and comparative. While descriptive typologies have been developed for the convenience of reporting, comparative typologies permit the comparison of finds from within one site or for comparison between sites, using a standard set of categories. This is the case with the Ille assemblage.

5.2.2 Classification in Southeast Asia

On a regional scale, Southeast Asia does not have a unified typological framework or one linked to chronology (Miksic 2003). Ceramic data are often published as descriptive single-site studies and although Solheim attempted to unify pottery traditions between Mainland and Island Southeast Asia this is problematic. Solheim (1964a) was the first to create a typology to systematically examine pottery in the Philippines and to enable handling of large sets of data. The typology was used in the organisation of previously excavated assemblages. At the time, there were no recognised pottery types for the area.

Solheim's classifications had several interrelated levels of abstraction integrated in varying ways and for different uses. These different levels were class; type; variety; complex and assemblage (Solheim 1964a, 2002: 3). He further designated a technical description to one class of pottery decoration. His classes, based on a specific method of decoration, were the result of a "distinct motor habit used by potters [...] therefore, a class in itself carries no indication of relationship or common origin and is of no direct chronological use" (Solheim 2002: 4). Classes comprised; Plain; Slipped; Painted; Glazed; Modelled; Appliqué; Incised; Engrave; Carved; Impressed and Moulded. While 'impressed' is a class, this is followed by a modifier such as; 'impressed: bound paddle', 'impressed: carved paddle' and 'impressed: simple tool'. Solheim defined 'types' as a "group of closely related sherds or vessels which have in common the same paste, temper, general surface colour, finish and decoration" (Solheim 2002: 3). As his classifications were primarily based on methods of decoration, he further states that

Any type may include some variation. Thus sherds or vessels of a type may differ in the number of methods or decoration... One type is distinguished from other types having the same paste, temper and surface colour and finish by one or more classes of decoration... The pottery type is useful for local comparisons between sites (Solheim 2002: 4).

Solheim (2002: 3) describes variety as “a subdivision of a type based on differences in decoration or technique”. This is essentially a ‘sub-type’ in this research. Within ‘paddle impressed’ for bound paddle this comprised; cord bound, straw bound or basketry, while carved paddle could be subdivided by the different patterns on the paddle. A complex was defined as a “group of two or more related types and varieties which occur consistently together in a number of sites over a wide area” and an assemblage was “made up of all the pottery found in an archaeological context in one site”. It may belong to one or many complexes. Solheim’s method of analysis was primarily based on observations of decoration and form. However, a majority of the pottery sherds from the sites are plain which means they could not be categorised according to Solheim’s typology. Problems with Solheim’s methodology are discussed in Chapter 2.

In Fox’s (1970) preliminary analysis of the earthenware pottery from the Tabon Caves, pottery types were tentatively established for descriptive purposes on the basis of surface treatment and form. There is a brief discussion of fabric and temper; however, it does not form a basis for classification. Fox’s approach explicitly built on Solheim’s and the technical study of Shepard’s 1957 [1956] work (Fox 1970: 76). Where possible, the percentage of each pottery type was based on exact vessel count and the original position of the vessel in the caves could be mapped (Fox 1970: 76). The pottery was grouped for a preliminary description into nine provisional types based on surface treatment. These were Tabon Plain (1), Tabon Polished (2), Tabon impressed (3), Tabon Incised (4), Tabon Painted (5), Tabon Organic Glazed (6), Tabon Incised and Impressed (7), Tabon Incised and Impressed: Painted (8) and Tabon Incised and Painted (9). By using these nine tentative pottery types, it was possible for Fox to provide an overall description of the basic characteristics of the Tabon Pottery

Complex. However, it was most unfortunate that with category (4) Tabon Incised Fox only lists the incisions marks: (1) Radiating lines (rare), (2) cross-hatching, (3) circles, (4) diamonds in bands (5) curvilinear scrolls and (6) variations of the triangle. A few freely drawn zoomorphic and floral patterns were encountered (Fox 1970: 85). Fox gives no sense of, for example, what a “radiating line” might look like, where it is placed or in what orientation on a vessel, and he does not indicate what formulation they occur in and there are no illustrations. He acknowledged that in the final analysis it may be necessary to modify these preliminary types (Fox 1970: 77). However, no further analysis to date has taken place on the Tabon pottery.

Analytical problems were encountered which influenced the quantification of the pottery types. Microscopic examination could not be carried out, therefore, it was difficult to distinguish with certainty the use of slips, and carefully smooth and unslipped sherds were not easily distinguished from lightly polished unslipped pieces which had a matte finish. Paddle impressions were hard to identify as they were often smoothed over after the impression had been made and distinction between cord marking with a bound paddle and grooving with a carved paddle were obliterated and thus difficult to detect. This further highlights practical reasons of how decoration can be an erroneous attribute for categorisation. Furthermore, unfired paints faded and decayed on exposed sherds, and sherds which may have been incised and then painted but would appear only in the incised category (Fox 1970: 76-7). In the introduction, Fox (1970: 4) states that as site reports were to be published for each of the major caves excavated, no attempts were made to present the detailed typologies of the tens of thousands of artefacts found. Unfortunately, due to Fox’s ill health no further reports were published on the Tabon materials and no typologies or further work on the ceramics were carried out. As the entire pottery assemblage is no longer held together and not accessible, it is impossible to reconstruct the formation of the various decorations in correlation with form. Therefore, there has been no scrutiny of the Tabon pottery typology and they have not been compared against pottery from subsequent excavations.

In the pottery processing of Khok Phanom Di, Thailand, the aim was to establish a soundly based chronology and cultural framework for Mainland Southeast Asia and understand the origin and role of rice cultivation (Vincent 1998, 2003a). Vincent (2000: 273) defines types both in terms of the traditional morphological and decorative emphases as well as the material from which the artefact was made. Vincent focuses on distinctive portions of the pottery which were sorted into morphological groups. In addition, surface treatments such as cord marked, incised, burnished, painted, impressed, applique and slipped categories were sorted and sampled. In terms of wares, Vincent (2000: 278) equates composition with ware in that only an understanding of the pottery composition allows for an accurate assessment of a ware. Furthermore, with the sampling method, Vincent (2000: 277) aimed to identify and distinguish each ware from an early stage of the analysis. The ceramics were sorted in two major steps; sorting the ceramics into broad fabric and form categories; then sifting the categories into representative groups by eliminating duplicated sherds and establishing discrete diagnostic samples for final detailed analysis (Vincent 1998: 10-11, 2003a: 4). The total weight of the ceramics, excluding sherds with form elements, was c.10,500 kg which equates to over 3,000,000 sherds. This endeavour, up to 1996, took 11 years and over 40,000 hours of work (Vincent 1998: 2-3).

The term 'ware' has its archaeological origins as part of the Processual type-variety system. Rice (1976: 538, also 1987: 484) describes a 'ware' as a classificatory unit whose members share similar technological attributes of pottery relating to paste composition and surface finish. It is generally regarded as "constituting a broader, higher order level of comparison than types, and may be derived from completed type definitions" (Rice 1976: 538). However, in Southeast Asia and the Pacific, 'wares' are often used without definition and uncritically. The term 'ware' is often appended to ceramics to describe a group with similar features, usually its fired colour or decorative technique. For example, black wares from controlled firing in a reducing atmosphere varying from grey to black from western Thailand (Sørensen 1964) and Malaya (Peacock 1959); the Lungshanoid Culture, China, had red, buff and black wares (Chang 1968) and Solheim *et al.* (1959) refer to incised and painted earthenware at the Niah Caves as "Three Colour Ware". The term "turtle ware" has been used to describes

'turtle-impressed' sherds as a this surface decoration was made by using the carapace bone of a turtle to impress the clay from Lobang Hangus and the Tapadong caves in Sabah, Northeast Borneo (Harrisson 1969). Thus, there is a precedent for red and grey ware, terms which will be used in this research when discussing the Ille assemblage.

Both Solheim and Fox use the term "plainware" and it is used in Pacific archaeology such as with the Marianas Plainware (e.g. Ayers 1985; also Galipaud 2006; Misra and Bellwood 1985). This term has been used uncritically as a 'catch-all' for ceramic types that have not been examined or identified in detail. Solheim (2002: 3) states simply that the 'plain' class of decoration is "an unaltered surface with no decoration". By extension this also means that the sherd or vessel is unslipped, not painted and not glazed. Fox (1970: 78) describes his type 'Tabon Plain' as "simply scraped, smoothed, and unslipped". Thus, these also have no decoration. Fox (1970: 78) also highlights that with this type of earthenware, the surfaces of jars with thick walls are often uneven and sand tempering and other non-plastic materials protrude into the surface areas. Fox (1970: 80) calls this category an "undistinguished ware" and discusses the forms found. In all caves, Tabon plain forms a major type numerically, being exceeded in a few caves by only Tabon polished and or Tabon impressed (Fox 1970: 80).

However, there were problems with identifying plain wares. Fox (1970: 76) acknowledges that it was difficult to distinguish with certainty the use of slips. Furthermore, slipped but unpolished pieces which were difficult to identify may have been included in the Tabon Plain category (Fox 1970: 80). The generalising term "plain ware" discounts fabric and manufacture and will not be used. In this research, "undecorated body sherd" is used to describe sherds without surface decoration and morphologically diagnostic elements.

The definitions of wares and types for the Ille assemblage were established as part of the ceramic processing and could only be finalised once the recording and an analysis of the ceramics had taken place and are given below.

5.3 Processing the Ille assemblage: Ceramic quantities and sampling

The first stage of the ceramic processing was to establish the quantity of the earthenware assemblage. Quantitative analysis is essential for addressing questions of temporal, spatial and social variation. Quantification is required for the development of a ranked sampling process which contributes towards classification to create a typology, and it is a starting point for comparing the assemblage with other assemblages at sites in the Dewil Valley and beyond. It enables the researcher to quantify the size of the whole pottery assemblage and the proportion of components within the assemblage such as the amount of specific fabrics or forms. Orton *et al.* (1993: 21; also Orton 1993: 169) define ceramic quantification as a “measuring of the amount of each type of pottery in an assemblage, with the view to describing the assemblage in terms of the proportion of each type present.” However, quantification is problematic in that the Ille ceramics were usually recovered as fragments rather than whole vessels. The Prehistoric Ceramics Research Group (PCRG 2010: 31) acknowledges that there are many ways to quantify ceramics (such as number of sherds, weight by fabric or form, estimated number of vessels *etc.*). What is most important is that any comparative analysis uses consistent systems of quantification, that the methods used are explained, and that the method is appropriate to the questions that are being asked.

As a total excavation of Ille Cave has not been carried out, the true population of the ceramic vessels cannot be known and as Rice (1987: 289) argues, a pottery collection “almost never represents all the pottery from an entire site”. Therefore, the excavation can be considered as a sample of the entire site. Further sampling within the excavated assemblage enables focused analysis on a manageable but known proportion of the whole, with the aim of identifying representative samples. In this research, further levels of sampling and analysis were undertaken to examine the ceramics in more detail, in order to characterise and assess the homogeneity within a fabric group which relates to the larger question of learning traditions and communities of practice. Rice (1987: 321) recommends that the best starting point for sampling is the identification of the problem and recognises that samples will

frequently be based on classifications traditionally used in archaeology such as types, decoration, fabric, form *etc.* This is used in sampling the Ille assemblage and discussed below.

5.4 Ceramic quantities: Ille assemblage 2004-2008

5.4.1 Earthenware total

During fieldwork, prior to the analysis of the earthenware assemblage, the author observed that there seemed to be a wide range of variation in fabric and surface decoration. Furthermore, differences were observed between the Ille assemblage and the ceramics from the sites surveyed in the Dewil Valley and El Nido. This research sought to establish and understand to what extent there was a range of variability, both within the earthenware assemblages and between the Dewil Valley ceramics, to assess whether more than one learning tradition was evident. The main dataset for this research comprised the earthenware excavated in the five-year period from 2004 to 2008. As a standardised recording system had been used since 2004, the pottery excavated in these years could be more confidently associated with the stratigraphy of the site. Ceramics from periods before 2004 and after 2008 and the Dewil Valley were also considered but do not form part of the main dataset.

All earthenware sherds in the assemblage between 2004 and 2008 were examined and counted. The ceramic quantities were based on how the sherds were counted at the point of accessioning by the number of sherds in a bag. All excavated sherds were given a unique identifying number and accessioned, and then bagged with the number of sherds in a bag written on the accessioning card. This is how the Ille ceramics were originally counted and recorded in the site reports. This recording method is standard practice in the Philippines as is required by the National Museum of the Philippines. Sherds were bagged as single sherds, in small and large groups, and in their hundreds. The bags of hundreds of sherds were either rims or undecorated sherds of comparable wall thickness but without decoration or other morphologically diagnostic pieces. However, it was difficult to determine the fabric of these sherds as many had not been cleaned sufficiently after excavation. A sherd count was considered the best method

for quantification as it relates to standard practice in the Philippines and is practiced when faced with limited time and physical space (see fig. 5.1). The total amount of sherds in the assemblage was 17,693.



Fig. 5.1 Left: workspace for sorting the ceramics and earthenware ceramics. Right: laid out for initial analysis at the University of the Philippines-Archaeological Studies Program (images: Y. Balbaligo)

Again, the initial grouping within the assemblage utilised standard practice within the Philippines and was based on morphological features and whether the sherds were decorated or undecorated, as this research considers form, forming technology and decoration as means of testing technological diversity (Balbaligo 2010a). Therefore, the following five descriptions were the most appropriate to use in grouping the sherds and relate to Solheim's (1964a) previous classifications; undecorated body (1); decorated body – including incised, impressed, painted but not red-slipped (2); rim (3); carination (4); and other (5). The other category (5) comprised vessel parts which did not fit into any of the above categories such as handles and lids. Rims and carinations were then divided into decorated and undecorated. The sherds grouped in this method comprise a typology of form for the whole assemblage.

Rims were problematic at this stage of analysis. It was difficult to identify whether some unrestricted rims were mouth rims or the foot rims of pedestal bowls. This problem of distinguishing rim sherds was also encountered by Solheim (1972: 513). However, during the course of this research, orientation of mouth and foot rims became apparent. Decorated body sherds refer only to incised, impressed and painted designs and not surface treatments such as polishes, slips or glazes. Identifying slips and glazes on undecorated sherds was a challenge faced by Fox (1970) with the Tabon Caves assemblage. Although Fox (1970: 78) had polished and glazed types, he acknowledged some sherds may have been categorised as “plain” because of the difficulties of carrying out identification in the field.

Although sherd fragments were counted, quantification did not indicate the number of vessels in the assemblage. Orton *et al.* (1993: 173) suggests using a rim chart to record the proportion of each vessel rim or base fragment as a fraction of the original, where a whole pot equals 100% and half a pot would equal 50%. Thus the cumulative score for each vessel type provides an estimated vessel equivalent system (EVE) for that part of the assemblage allowing some comparisons of the number of whole vessels represented within different assemblages. Although a rim chart was used to measure the radius of the rim orifice and rim percentage to enable classification of the form (see below), the EVE was not estimated. The EVE method works best with large groups of pottery that can be compared, and standardised complete vessels with intact rims. It is less easy with low-fired, irregular hand-made vessels and where there are no other complete collections that have similar quantities for comparison. Therefore, this system does not always allow for the implementation of statistically justified systems of comparative quantification (PCRG 2010: 17). However, these data have been recorded, as the PCRG (2010: 17) recommends that these variables be recorded wherever possible, and with the results of this research it would now be easier to establish the minimum number of vessels represented.

Overall, less than ten whole or almost complete vessels have been found at Ille. Where possible, during excavation, accessioning or analysis, reconstructions of vessels were carried out but this was only possible with a few vessels that were either broken in

large fragments or were recovered in the same context and had clear morphologically diagnostic pieces which enabled easy reconstruction. Due to the fact that the site has not been fully excavated and there were time and space constraints, an extensive join-finding exercise was not carried out. Despite reconstructions of vessels not being the focus for this research, it would now be possible to undertake further reconstructions, starting with the bags containing hundreds of sherds from the same context.

For the Ille assemblage, a sherd count was the most appropriate method to enable quantification without supplementary techniques such as weighing the assemblage which is a common practice in archaeology and advocated by Solheim (1960). Orton (1993) details its history and methods are set out by the PCRG (2010: 31). There are instances where weighing can be advantageous. The original weighing of the Niah earthenware assemblage enabled Cole (2012) to reweigh the assemblage and this allowed a comparison between sherds in the original archive records, highlighting the approximate number/weight of sherds missing (Cole 2012: 83-4). However, Adams (1988) argues against the “misplaced” and time consuming effort of weighing. Adams (1988: 53-4) states that where vessels of the same type vary substantially in size, neither weighing nor counting provides an accurate indication of the numbers of vessels originally present, and the extra effort of weighing is only worthwhile if the weights provide a more reliable estimate of the original vessel numbers than do the numerical tallies. With the Ille assemblage, there were no complete comparative dataset to be weighed against and weight would not give an indication of the total number of vessels and there is no comparison of measures, therefore, this method was not used.

There are however, problems with both sherd count and weighing assemblages. Warner Slane (2003), discussing Corinth's Roman pottery, argues that neither sherd count nor cumulative weight is an ideal measure, as sherd count records the number of broken pieces rather than the original number of vessels present and, therefore, reflects both the fragility of a type and how a deposit was formed, whereas quantification by weight varies according to vessel size and wall thickness and is also subject to the vagaries of deposition (Warner Slane 2003: 321). Despite this, by using

the five groups to describe morphology and decoration, it was possible to quantify the assemblage and provide an overall quantification of the basic characteristics in relation to earlier systems of classification in the Philippines. This count of the earthenware provided a basis for sampling. Three levels of sampling were conducted with the aims of identifying variation to enable examination of learning traditions at the site.

5.5 Sampling method 1: for macroscopic analysis and typology

5.5.1 Stratified systematic sampling for macroscopic analysis

After the sherds were counted, the sherds were sampled to form wares and types to assess variability, and to enable further sampling for petrography. The first level of analysis involved selecting samples for macroscopic examination. Selections were identified visually based on the criteria of a range of fabrics, form and surface features, manufacturing techniques and unique finds from the known contexts and throughout the site. However, there was a bias towards selecting all variations of decorated sherds to capture the range of decorations at the site.

This method of sampling was a 'stratified systematic sampling strategy' and selected as the best method to assess and characterise the range of variation in the assemblage. A stratified systematic sampling technique combines elements of simple random sampling, stratified random sampling, and systematic sampling in an effort to reduce sampling bias (Kipfer 2000: 538) and is fully representative of the overall assemblage. Rye (1981: 7) asserts that to permit correlating stylistic classifications with technological classifications, the sample of pottery should contain the range of variation in attributes required for analysis of decoration, vessel shape, materials, forming techniques, and firing techniques. The stratified sampling technique adopted in this study divided the assemblage into groups based on morphology and decoration before sub-sampling for further analysis such as petrography. Due to time constraints, a sample of 10% of the sherds from the total sherd count were selected for macroscopic examination.

Although at this stage, the site Harris matrix had not been fully developed, all sherds with contexts were automatically selected to be mapped to the Harris matrix. This included large bags which contained tens and hundreds of undecorated body and rim sherds from secure contexts with the intention of examining the sherds and, where possible, undertaking some vessel reconstructions. Sherds without contexts, for example sherds which had become separated from their original context number and from wall cleanings were included to demonstrate variation.

5.5.2 Attribute determination by macroscopic analysis

This research identifies technical variations and groups the sherds into wares and types in order to identify different learning traditions within the assemblage. To standardise terms, this research built on existing work undertaken in the wider archaeology of Southeast Asia, especially Solheim (1964a) and Fox (1970), and the Pacific, where Summerhayes' (2000) work on Lapita pottery were also relevant. By building on previous classification systems used in the Philippines it is possible to relate this work to earlier studies while at the same time reassessing earlier claims in light of more detailed technical analysis. Establishing wares and types aimed to be replicable and accessible for other researchers to reproduce similar classifications in future work. Creating wares and types involved a two-stage process. The first stage was to characterise attributes by macroscopic analysis. The second stage was to create a typology of wares and types based on correlating attributes. Initial analysis took place in the field, and then at the University of the Philippines-Archaeological Studies Program prior to further materials analysis at the Institute of Archaeology, UCL.

The General Policies and Guidelines for Analysis and Publication of ceramics by the Prehistoric Ceramics Research Group (PCRG 1995, 2010) provide guidelines to facilitate consistent identification, description and recording of ceramics with standardised templates. Although the guidelines were written specifically for British Neolithic to Iron Age ceramics, the approaches and aspects of standardised methodologies that they have developed for hand-made low-fired non-industrial pottery were appropriate and were transferrable to the pre-Contact Age earthenware of the Philippines.

Fabric, form and surface treatment were the key attributes determined to form wares and types. This was done by macroscopic examination using the naked eye and hand lenses (magnifications at 5x, 10x, 12x). Sherds were categorised into preliminary fabric groups which consisted of the clay matrix, inclusions (naturally occurring or added temper) and the fired colour (PCRG 2010: 21). Inclusions were recorded in terms of frequency by density of inclusion, sorting, roundness and sphericity classes and grain size using PCRG's standardised charts (also Orton *et al.* 1993). Sherds were tested for calcareous matter using dilute hydrochloric acid (10% HCl). Porosity was accounted for in terms of visible voids on the surface of the sherds and in the cross section using definitions by PCRG and Bullock *et al.* (1985). Where inclusions and voids were difficult to assess due to extant soil on the sherds, fresh breakages were made using pliers. However, fresh breakages were not sufficient to determine microstructure, types of temper, variation in paste preparation or technological process that contribute to establishing learning traditions, therefore, petrography was also used. Hardness was ascertained with reference to the Mohs scale of hardness using a fingernail and a metal blade and texture was determined by eye and by touch. The fired colour was judged using the Munsell Soil Color Chart (2010) in natural light. The core of sherds in cross section was used as an indicator of the atmosphere, temperature and duration of firing, indicating whether the conditions were oxidised or reduced. This was compared to stylised cross sections by Rye (1981: 116).

An examination of form was classified by shape. PCRG (2010: 29) offers guidelines for analysing form at two levels; by overall vessel form and form elements. Overall vessel form is often based on their geometric shape with attention being paid to the anatomy of the vessel. Only few examples of whole vessels were excavated at Ille, therefore, form was judged by the extant sherds which were initially sorted by form elements during the quantification of sherds. Overall proportion can only be estimated and categorised into broad classes of vessels centred around definitions of common shape names such as jar, bowl, dish, plate (Shepard 1985: 225) as well as common forms found in Southeast Asia such as pedestal bowls. Morphologically non-diagnostic body sherds, rims, carinations and other notable forms such as handles and lids were examined. Size and wall thicknesses across various parts of the sherd were taken with

an electronic digital calliper. To determine how pedestal bowls were made, experimental archaeology was undertaken. A pedestal bowl was formed using Pit Sun Brown clay. A bowl was made first by hand and the foot ring made second. The two were joined by scoring the bowl and attaching the foot ring and smoothing the joins while the clay was still wet. This process informed how the pedestal bowls were constructed for analysing the form and structure of the Ille pedestal bowls.

For rims, the radius of the rim orifice and rim percentage was measured with a standard diameter-measurement template marked in centimetre units. Rim types, direction, profile and lip profile were examined as a way of distinguishing rims from one another and determining which come from which vessels. This was based on Summerhayes' (2000) study of Lapita and Pacific earthenware and White and Henderson's (2003) work on rim nomenclature. Pacific earthenware pottery shares form types with Southeast Asian ceramics which were more appropriate for identifying rim types than with rim types set out in PCRG. The angles of carinations were measured with a contour gauge. An examination of forms also gives an indication of function. Although Solheim (1972: 515) does not use consistent nomenclature for different forms, in general he uses "pots" to refer to vessels for cooking, "jars" for storage, "bowls" for serving and display of food at ceremonial or social occasions and describes "burial jars" as large in size with wide mouths when meant for primary burial. However, Shepard (1985: 224) proposes caution because the same shape may have a variety of uses, the same purpose may be served by many forms and all the uses people had for pottery cannot be known.

Macroscopic examination using the naked eye and hand lenses (magnifications at 5x, 10x, 12x) were used to assess surface treatment. Surface treatments were divided into surface finish and surface decoration. Sherds were examined for surface finish which included slips, burnishing, polishing, wiping, painting and resin. Impressed and incised decoration style were observed and recorded as part of the surface decoration. Acid reaction was also carried out using dilute hydrochloric acid (10% HCl) to test for the presence of calcium carbonate from the infilling of decorated sherds. Incised and impressed decorations were compared to published reports of earthenware pottery

excavated by Solheim (1964a, 2002) and Fox (1970) and other ceramic sites in Southeast Asia.

Digital photographs were taken for all sherds. The exterior, interior and profile were captured using a 5.0 mega pixel Canon Digital IXUS 55 camera in natural light. Shepard (1985: 251) advocates that there is no substitute for a good photograph as it gives a normal view and shows at once shape, decoration and workmanship. As recommended by Shepard (1985: 252), the level of the lens was placed at the mid-point of the vessel to avoid distorting the contour and relative proportions. Other views were also taken to show decoration or special features. Shadows were useful in some instances to emphasise decoration or certain techniques. Digital photography was favoured over conventional stylised archaeological illustration. Archaeological drawings are generally based on the illustrator's perception and focuses on aspects that are prominent or important. Early images of pottery in Southeast Asia were stylised illustrations which make it difficult to identify similar decorative traits or colours of fabric. However, an advantage of illustrations is that the illustrator interprets what is important and can highlight this, such as intricacy in decoration, which may be lost in photographs. Despite this, for the purposes of this research, colour photography was favoured as it allowed for comparative identification, showing better detailing such as inclusions, depth of incision and impression, and where white infilling occurs. On a practical level, it was quicker to photograph than draw sherds in the field and images could be consulted after post-excavation analysis had taken place.

Rims and other forms were drawn in profile giving a more clear-cut picture than a perspective view using conventions from Adkins and Adkins (1989) with rim profiles to the left-hand side (Adkins and Adkins 1989: 165). Shepard (1985: 252) states that the illustration of rims serves two purposes: to illustrate the shape in outline and show the variation in the thickness of the wall. However, Adams (1988: 53) warns against illustrating hundreds of meaningless rim profiles. Only a sample of representative rims were drawn on tracing paper and coloured with Indian ink. The sherd was accurately orientated, where the edge of the rim was held against a flat surface to bring the arc into a horizontal position. Shepard (1985: 253) says that unfortunately there is no way

of knowing whether or not illustrated rims were accurately oriented. All attributes of individual sherds were logged on a preformatted earthenware recording form based on Barretto-Tesoro's (2007, 2008) research of ceramics from fifteenth century AD from Calatagan, Southern Luzon, Philippines (see figs. 5.2, 5.3 and 5.4 for filled in example of a recording form). The attributes were coded and entered on an Excel spread sheet to form a database.

5.5.3 Creation of wares and types based on correlating attributes

As discussed in section 5.2 above, wares are problematic and there is no consistent definition of ware in Southeast Asia. Wares have been broadly used as regional descriptions of distinct ceramic groups distributed in Southeast Asia and defined by their exterior visual. Attempts have been made to link regional wares with cultures, for example the 'red type pottery horizon' has been interpreted as an expression of the Austronesian expansion (Swete Kelly 2008; Bellwood 1997, 2005; see Chapter 2). Thus, the idea of wares has been predefined external to this research. This research defines 'wares' to mean ceramics groups related to wider regional styles that have previously been identified, and can be distinguished by its exterior visual, such as fired colour, and used as a higher level of ordering (for example red ware and grey ware). These are used as descriptive terms without prior assumptions about what these mean in terms of social movements.

Earthenware recording form for Ille Cave, El Nido, Palawan

Number: 066 Date: 17/10/08

1. Accessioning details

Accession no: IV-1998-P- 36952 Year (excavated/accessioned): 2005
Trench: West connection Context no: 897 Depth (DP or Surface): /
Other excavation details: /

Significance of sherds. Example of:

Surface treatment <input checked="" type="checkbox"/>	Manufacture technique <input checked="" type="checkbox"/>	Unusual, unique, notable form <input type="checkbox"/>	Fabric <input checked="" type="checkbox"/>	Diagnostic <input checked="" type="checkbox"/>	Rim <input checked="" type="checkbox"/>	Other <input type="checkbox"/>
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Magnification: 5x 10x Microscope: 40x 100x

2. Form

Category

1. Undecorated body <input type="checkbox"/>	2. Decorated body <input type="checkbox"/>	3. Rim <input checked="" type="checkbox"/>	4. Carination <input type="checkbox"/>	5. Other <input type="checkbox"/>
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Non-metrical attributes - shape/body form:

Globular <input type="checkbox"/>	Ellipsoid <input type="checkbox"/>	Ovaloid <input type="checkbox"/>	Cylinder <input type="checkbox"/>	Hyperboloid <input type="checkbox"/>	Cone <input type="checkbox"/>	Unknown <input checked="" type="checkbox"/>
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Metrical Attributes

Size	Small (3 to 6 cm) <input type="checkbox"/>	Medium (6 to 12 cm) <input checked="" type="checkbox"/>	Large (> 12.8 cm) <input type="checkbox"/>
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Digital callipers ☒ Analogue callipers ☐

#	Thickness (cm)	Where taken	Why recorded?	Rough sketch of where (in profile)
1	2.21	Lip length	Comparison lip lengths	
2	0.66	Lip	Comparison lip thickness	
3	0.78	Inflection point	Presence of inflection	
4	0.44	Body	Comparison body thickness	
5	Length across	7.4 cm		

If carination (°)	If rim
Angle	Orifice diameter (cm)
<u>/</u>	<u>15</u>
	Rim (%)
	<u>10</u>

Rim

Mouth	Rim Direction	Rim Profile	Lip profile
Restricted <input type="checkbox"/>	Everted <input checked="" type="checkbox"/>	Parallel <input type="checkbox"/>	Flat <input type="checkbox"/>
Unrestricted <input checked="" type="checkbox"/>	Direct (straight) <input type="checkbox"/>	Convergent (thinned) <input checked="" type="checkbox"/>	Rounded <input checked="" type="checkbox"/>
	Inverted <input type="checkbox"/>	Divergent (thickened) <input type="checkbox"/>	Pointed <input type="checkbox"/>

Fig. 5.2 Earthenware recording form, page 1, example sherd IV-1998-P-36952, thin section sample 001 (see appendix B)

3. Surface treatment

Surface finishing techniques

None	<input type="checkbox"/>	Unobservable	<input type="checkbox"/>	Polished	<input checked="" type="checkbox"/>	Other/comment <input type="checkbox"/>
Slipped	<input checked="" type="checkbox"/>	Wiped	<input type="checkbox"/>	Painted	<input type="checkbox"/>	
Burnished	<input type="checkbox"/>	Brushed	<input type="checkbox"/>	Glazed	<input type="checkbox"/>	

Impressions

None	<input checked="" type="checkbox"/>	Paddle impressed	<input type="checkbox"/>	Shell impressed	<input type="checkbox"/>	Basket impressed	<input type="checkbox"/>
Cord/vine marked	<input type="checkbox"/>	Matt impressed	<input type="checkbox"/>	Other <input type="checkbox"/>			

Application techniques and description

Incised	<input checked="" type="checkbox"/>	Horizontal bands and diagonal lines forming triangles
Punctuated	<input checked="" type="checkbox"/>	Irregular dots c. 0.16 mm across
Stamped	<input checked="" type="checkbox"/>	C-stamps - consecutive
Infilled	<input type="checkbox"/>	None - but may have been present
Other	<input type="checkbox"/>	

Other application techniques

No other	<input checked="" type="checkbox"/>	Rolled	<input type="checkbox"/>	Combed	<input type="checkbox"/>	Fingernail/tip impressed	<input type="checkbox"/>
Embossed	<input type="checkbox"/>	Excised (carved out)	<input type="checkbox"/>	Other <input type="checkbox"/>			

Tool(s) used: Pointed stick, circular reed / bamboo

4. Manufacturing techniques

Primary forming techniques.

Handmade	<input checked="" type="checkbox"/>	Wheel made	<input type="checkbox"/>	Moulded	<input type="checkbox"/>
Slab-built	<input type="checkbox"/>	Wheel finished	<input type="checkbox"/>	Pinched	<input type="checkbox"/>
Coil-built	<input type="checkbox"/>	Wheel thrown	<input type="checkbox"/>	Pulled	<input type="checkbox"/>
Paddle and anvil	<input type="checkbox"/>	Applied or attached	<input type="checkbox"/>	Unknown/other <input type="checkbox"/>	Foot ring joined to upper bowl

Secondary forming techniques

Beating	<input type="checkbox"/>	Trimming	<input type="checkbox"/>	Turning	<input type="checkbox"/>
Scraping	<input type="checkbox"/>	Shaving	<input type="checkbox"/>	Unknown/other	<input checked="" type="checkbox"/>

Evidence of use wear – e.g. sooting on interior, burnt exterior, lower surface, etc:

Black deposits on exterior surface from deposition.

Other notes

- Any other comments or notes on interpretation

Thin sectioned as an example of red slipped c-stamped pedestal bowl and to examine fabric - especially temper.

Fig. 5.3 Earthenware recording form, page 2, example sherd IV-1998-P-36952, thin section sample 001 (see appendix B)

5. Fabric

Fabric colour: Red Munsell: red 10y 4/8
 Shade-hue-colour: Mid-orange brown

Inclusions visible	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Unknown <input type="checkbox"/>
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Inclusion (i.e. sand, organic/plant, rice/husk, limestone, shell, bleb, coloured particles, other):

#	Inclusions or voids (App. 1 and 2)	Frequency (App. 3)	Sorting (App. 4)	Rounding (App. 5)	Sphericity (App. 6)	Size (App. 7)	Natural, temper or unknown
1	Grog	Sparse	Poor	Rounded	High	Medium sand	Temper
2	Quartz	Moderate	Moderate	Sub-angular	Low	Medium sand	Natural
3	Chert	Sparse	Poor	Sub-angular	Low	Medium sand	Natural
4							
5							
6							
7							

Comments on inclusions and paste/clay matrix:
fine clay matrix with medium inclusions

Firing and oxidation. (D)CM – (Diffuse) Core Margins (cf. Rye 1981, 116)

No core (1 & 2)	<input type="checkbox"/>	Reduced, organics originally present, DCM (7)	<input type="checkbox"/>
Oxidised organics originally present, DCM (3-4)	<input type="checkbox"/>	Reduced, organics unknown (8)	<input type="checkbox"/>
Reduced, no organics, DCM (5)	<input type="checkbox"/>	Reduced, cooled rapidly, sharp CM (9-10)	<input checked="" type="checkbox"/>
Reduced, no organics, no core (6)	<input type="checkbox"/>	Reduced, cooled rapidly more than once (11)	<input type="checkbox"/>

Colour of core: Grey

Comment on firing: Thin core margins - same colour as exterior and interior.

Porosity

Open <input type="checkbox"/>	Medium <input checked="" type="checkbox"/>	Dense <input type="checkbox"/>	Incipient Vitrification <input type="checkbox"/>
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Condition of sherds

Fresh	<input type="checkbox"/>	Abrasion	<input type="checkbox"/>	Average	<input type="checkbox"/>	Flaked	<input type="checkbox"/>
Worn	<input checked="" type="checkbox"/>	Pitted	<input type="checkbox"/>	Very worn	<input type="checkbox"/>		

Texture	Smooth/fine	<input type="checkbox"/>	Rough – sandy	<input type="checkbox"/>	Very sandy	<input type="checkbox"/>	Granular	<input type="checkbox"/>
Hardness	2 (fingernail)	<input type="checkbox"/>	3 (coin)	<input type="checkbox"/>	4.5 (window glass)	<input checked="" type="checkbox"/>	6 (pocket knife)	<input type="checkbox"/>

Reacts with hydrochloric acid Yes ☐ No ☒

Comments (heterogeneous/homogenous?):

Evidence of residues Yes ☐ No ☒

Comments:

Photographed ☒ Scanned ☐ All 3 forms complete ☒ Entered on database ☒

Fig. 5.4 Earthenware recording form, page 3, example sherd IV-1998-P-36952, thin section sample 001 (see appendix B)

Types are hierarchically nested below 'wares'. This research defines 'types' as a local variation of a regional style identified by specific correlating attributes incorporating forming, decorating, firing and learning techniques. Types may also have correlating fabrics. While all wares will consist of types, as yet, not all types are wares. Types may belong to wider ware categories in the region but this is beyond the scope of this research. A subtype is a subdivision of a type which has similar decoration but may vary in decorative technique, fabric or in form and forming technique (for example pedestal bowls). Types were given a number and a name based on types found in Southeast Asia to build on typologies in the region and provide continuity. Where necessary, type names are descriptive if a type name does not already exist. This typology groups ceramics together and describes the degree of variation in order to discuss what that degree of variation might mean and through this assess different learning traditions. The formation of wares and types allows direct comparison with other ceramics from sites in the Dewil Valley and beyond. The typology itself has no assumptions of chronology within it but will be examined to see the extent to which the typology has a chronological significance.

5.6 Sampling method 2: for ceramic petrography

5.6.1 Samples for thin section analysis

The second level of sampling involved selecting samples for thin section analysis in order to document and characterise groups that were initially defined by the macroscopic analysis. The objectives of this petrographic study were threefold; firstly to describe and classify the samples into fabric groups based on characteristics. Characterisation represents the process of combined description and classification. This contributed towards the classification of sherds into wares, types and subtypes. Secondly, to examine the degree of compositional and technological variation between the samples, and assess whether variation seen at the macroscopic level could also be seen at the microscopic level. Thirdly, to investigate whether provenance could be determined to establish whether raw materials were locally sourced and whether ceramics were manufactured locally. The creation of this dataset has the potential to enable comparison to other ceramic fabrics in the region.

Thin section analysis was carried out in two parts. For the first part, 21 sherds were selected for thin sectioning to see what variation occurred and permission was granted by the National Museum of the Philippines. The sample of 21 sherds represented a selection of wares and types from the macroscopic analysis with some duplication (see Appendix C Petrography Report for list of sherds selected for sampling). Although more ceramic varieties may be present in the assemblage, thin sectioning is a destructive process, therefore, only few sherds were selected in the first instance to preserve the assemblage. Time and financial constraints were also a factor. Fifteen thin sections were prepared for optical microscopy by the University of the Philippines-National Institute of Geological Studies (UP-NIGS) and six were made by the author in the Preparation Laboratory of the Wolfson Archaeological Science Laboratories, Institute of Archaeology, UCL. It is acknowledged that a small sample is not statistically ideal and a range of different ceramic types are inadequate to provide a conclusive petrographic assessment. Freestone (1995: 114) advocates a minimum group size of least 10 for statistical validity. In light of this, the sample was expanded.

Further permission was granted by the National Museum of the Philippines to expand the sample and create more thin sections. The second part of the petrographic study expanded the sample by focusing on two defined wares out of the initial 21 samples that were most significant on the basis that they were the most commonly occurring wares at the site and which have also been defined in other parts of Southeast Asia and to see if the group was homogenous. A further 23 thin sections were made of two ware types and analysed; 11 Red Ware and 12 Grey Ware sherds, to assess if they were consistently of the same fabric composition and to give further information about each ware. Thin sections were made by the author in the Preparation Laboratory of the Wolfson Archaeological Science Laboratories, Institute of Archaeology, UCL.

Preparation of the thin section involved cutting a fragment of the earthenware sherd with a slow speed saw which was then hand polished using a wet silicon carbide slurry. The off-cut was heat impregnated with an epoxy resin, and once dried, hand polished using the wet silicon carbide slurry. It was mounted onto a frosted glass slide with

ultraviolet (UV) glue and cured under UV light. Once the off-cut had bonded to the glass slide, the off-cut was separated with a saw and the thin section was ground and hand-polished to 30 µm. Finally a glass cover-slip was applied with UV glue and cured under UV light.

The analysis of the thin sections was an iterative process. The author's initial training for optical microscopy was undertaken at the Department of Earth Sciences, UCL. The first sample of 21 sherds were analysed by the author at University of the Philippines-Archaeological Studies Program (UP-ASP) using an Olympus CX31 petrographic microscope with 40-100x magnifications and micrographs taken with an Olympus digital camera. Analysis continued in the Optical Microscopy Laboratory at the Institute of Archaeology, UCL using the polarising light microscope with 50-500x magnifications. The thin sections were then examined and micrographs taken in the Optical Microscopy Laboratory.

Each thin section was characterised with descriptions of composition including scalar data of components such as the size, shape and roundness classes, arrangement, sorting, frequency and density. Determination of their textural characteristics, dominant features, birefringence and colour, and technological processes evident were recorded. Systematic descriptions of thin section analysis proposed by Whitbread (1995: 365-396, 1989) and modified by Quinn (2013) were used (see Appendix C Petrography Report for abundance estimation chart and abbreviations). Voids were discussed using soil-micromorphology terms to ascertain porosity and interpreted origin of pores (Bullock *et al.* 1985). Fabric groups were based on similarities of composition of the clay matrix and tempering material, where fabrics contained the same grains of the same size, frequency and sorting. All modes of grain counting are subjective and open to petrographer's error (e.g. Neilson and Brockman 1977; Stoltman 1989). However, area counting was favoured over point counting and line counting, to take into account all of the features and possible variations across the thin section. Frequencies and percentage of minerals and inclusions were based on an estimated area count of the total area of the sample and were done by the author for consistency. Although in some fabric groups only one sherd was thin sectioned, this

'loner' was not the only one in the assemblage but represents a small proportion of the sample (Quinn 2013: 79).

While this part of the study is primarily focused on classifying thin sections into fabric groups, the potential of provenancing will also be assessed. Quinn (2013: 120) states that rock fragments can suggest the presence of specific lithologies in the fabric can also be interpreted from the suite of different individual minerals in the fabric and their relationships to one another. Attempts at provenancing the sherds were made by identifying the major minerals and rock inclusions in thin sections. This information was then compared against known geological surveys and available geological maps of north Palawan. The rock and mineral inclusions in thin section were examined to see if they match the lithology of an area to identify if it was a potential source of raw materials. Using Google Earth, the extent to which river and drainage basins could be used to see if there were indications of sediment transport was considered. However, this region is massively understudied. The bedrock at Ille Cave has not been reached and the geology between the limestone karsts outcrops and underneath the flat landscapes of the Dewil Valley is unknown. Detailed geological map and soil maps do not exist for the region. It is not geologically assessed and research into clay samples were beyond the scope of this research.

5.7 Sampling method 3: for organic analysis

5.7.1 Samples for rice temper

During excavation at the site, earthenware sherds with plant, possibly rice impressions, were observed (Carlos 2006). During the macroscopic analysis, clear plant impressions on the surface of the sherds were observed and images were taken with an Olympus SZX9 stereomicroscope at UP-ASP. Presence of rice temper was further proved during the petrographic analysis as two of the samples showed plant remains in thin section. To investigate this further, the two sherds were analysed to investigate what type of plant remains were evident, whether these inclusions were added as temper, and to see whether the plant remains could be dated. Further micrographs were taken of the sherd interior where the imprints were most visible to enable identification of areas

with promising impressions (*cf.* Fuller *et al.* 2007) using a Leica EZ4D Stereomicroscope with integrated 3.0 megapixel CMOS camera and LASER software in the Archaeobotany Laboratory, Institute of Archaeology, UCL. Multiple casts were taken from the exterior and interior of the remaining sherds. The casts were made by mixing a base and catalyst of *Coltène President*, a silicone-based impression material. The cast material was pressed into the impression and spread across the area. Despite the method being relatively non-destructive, each generation of casting removed a layer of the sherd, therefore, only three sets of casts could be taken per area. The casts were coated in gold to make it conductive then examined and imaged using a Hitachi S-3400N Scanning Electron Microscope (SEM) in the SEM Suite of the Wolfson Archaeological Science Laboratories, Institute of Archaeology to enable identification of the plant remains. Modern samples of an awn, rachis (cereal, origin unknown) and rice husk (*Oryza Sativa* L. from Bhutan) were also gold coated, mounted on a SEM stub, analysed and imaged for comparison.

Permission was granted by the National Museum of the Philippines to use the same two rice tempered sherds to see if dates could be determined. This meant total destruction of the samples by Accelerator Mass Spectrometry (AMS) radiocarbon dating and Optically Stimulated Luminescence (OSL). All preparations and dating was carried out by the Oxford Radiocarbon Accelerator Unit, University of Oxford. AMS radiocarbon dating dates the organic materials in the sherd. It does not give an age of the ceramic but can provide direct ages for the presence of cultivated rice in the area. There is a precedent of using AMS radiocarbon dating in Southeast Asian archaeology for dating of rice tempered pottery (Bellwood *et al.* 1992; Higham *et al.* 2010; Higham *et al.* 2011; Ipoi Datan and Bellwood 1993). However, the procedures are problematic. There is a risk of low carbon yield in the ceramic body from the organic materials. There are also several possible sources of carbon from the clay matrix and organic material in the natural clay which might be older than the ceramic itself, smoke and soot generated during firing can be absorbed into the temper or from fuel, and even surface residue (Higham *et al.* 2010: 1024; Higham *et al.* 2011: 588). Higham *et al.* (2011: 596) caution that AMS radiocarbon dating of rice-tempered sherds is open to inaccuracies and at best provides a *terminus post quem*. OSL provides a date for the

ceramic itself from the time of their last heating to a high temperature (> 400°C) by dating the quartz inclusions but there is a risk of low or no signal for OSL dating. OSL dating was introduced in order to account for the 'old' carbon effects that seem to occur with AMS radiocarbon dating. Combining AMS radiocarbon dating and OSL dating has the potential to increase the reliability of the dates for the ceramics.

5.8 Establishing learning traditions

Once the wares and types had been characterised, it was then possible to group related types together by correlating technological attributes to demonstrate that a group of types could comprise a learning tradition. A tradition can be described as the transmission of customs or beliefs from generation to generation. It is also an artistic method or style subsequently followed by others (Oxford English Dictionary 2013). Thus a ceramic tradition is the overarching presence of ceramics that were made in the same technological fashion, transmitted by people or groups of people. Within a ceramic tradition there may be different learning traditions which apply the same technological practice and supported by learning networks. These learning networks are where transmission of knowledge takes place, usually from generation to generation – between family members and within social groups through structures like apprenticeships (for example Hegmon 1998). These ceramic practices were carried out by communities of practice, more explicitly potters who were organised and reproduced their culture (see Chapter 4 for discussion). A basis for establishing learning traditions and ascribing types to a learning tradition can be seen in the production sequence. Fabric is the key component, in the composition, but also in the selection and processing of raw materials. This is followed by forming and shaping techniques, decorative technique, rather than just decoration as an end product, and surface finishing techniques and application of firing technology. As Chapter 4 asserts, 'pots do not equal people'. Groups of the same ceramics may be produced by the same or different groups of people or different ceramics may be produced by different groups of people. The extent to which this can be determined with the Ille assemblage will be investigated.

5.9 Other ceramics

5.9.1 Ceramics from early and later excavations at Ille Cave and the Dewil Valley

Earthenware sherds from 2004 to 2008 comprised the main dataset for this study. However, additional earthenware from Ille Cave were examined from the earlier excavations of 1998 to 2002. The ceramics comprised the surface finds and earthenware pottery from test pits and early excavations, and earthenware from the top of the Ille tower and the surface finds of cave sites in the Dewil Valley and the wider El Nido area from 1998 to 2008. After the 2008 excavation at Ille, attention turned to the Dewil Valley and there was considerably less activity at Ille, therefore, less earthenware was excavated. Both earthenware and high-fired ceramics from the 2009 excavation were examined for comparative purposes and to ensure consistency across the assemblage. Earthenware excavated after 2010 will be considered in terms of fabric, form, surface decoration and manufacture but will not form part of the dataset. Excavations at Ille Cave and at sites in the Dewil Valley are ongoing. Ceramics excavated after 2011 were not considered as part of this research. Although these ceramics fall outside the scope of this research, they are useful for comparative purposes.

All earthenware pottery was counted and characterised as discussed below. As with the 2004-2008 Ille assemblage, the fabric, form and surface treatments were assessed by macroscopic examination using the naked eye and hand lenses (magnifications at 5x, 10x, 12x), photographed and descriptions recorded. However, due to time constraints, these ceramics could not be analysed to the same depth as the 2004-2008 assemblage.

5.9.2 High-fired ceramics

Stoneware, celadon and porcelain have been recognised at Ille. In Philippine archaeology, most high-fired ceramics have *en masse* been called 'tradeware' and this has been perpetuated uncritically (*cf.* Arriola 2010 discussion of Manilaware). However, this term is a misnomer as some of the stoneware may have been manufactured locally and not 'traded'. The high-fired ceramics will be assessed to see

whether the stoneware sherds were indeed tradeware or locally made. While these high-fired ceramics at Ille were considered, detailed examination is outside of the scope of the thesis. However, an assessment of their occurrences on site will be carried out to aid the chronological sequence and will be discussed in terms of provenance and distribution. The high-fired sherds were immediately recognisable amongst the many earthenware sherds in the assemblage and were separated. The ceramics were categorised by ceramic type which comprised stoneware, celadon and porcelain. The high-fired sherds were counted, attributes including decoration and form elements noted, then separated into contexts where possible.

5.10 Constructing and analysing the site stratigraphy

In order to understand the archaeological contexts and deposition of ceramics at Ille Cave, a Harris matrix of the East and West mouth trenches was constructed to assess the degree to which stratigraphy can be used to develop a chronology of the ceramics at the site. The information on the Harris matrices created as part of this PhD research was derived from the Harris matrices of the Palawan Island Palaeohistoric Research Project (PIPRP). Permission was given by the Project Directors for the author to use the excavation Harris matrices for the creation of matrices relating specifically to the ceramics. At the start of this PhD research, the matrices were not available and only became available in the later stages of research. The ceramic matrices were constructed at the School of Archaeology, University College Dublin between 2010 and 2012. To date, the Harris matrices created by the project are not complete and await further work. Therefore, although these matrices are correct and fit for purpose, they are also a work in progress. Any errata are the responsibility of the author and will be corrected by the Project Team.

It was clear during the excavations that the site was deeply disturbed through ancient and modern activities such as grave digging, looting and modern postholes from bird nesting, and also through bio-turbation such as termite nests, burrowing animals and plant roots. This was especially evident in the upper phases of the site which comprised the cemetery. Therefore, it was unlikely that a clear pottery sequence

linked to site chronology could be established (ASP 2005-2006; Paz and Ronquillo 2004). However, this proposition needed to be tested, the extent the site was disturbed needed to be examined, and it is essential to understand the contexts and relationships even if the site is disturbed.

The West mouth shows more disturbance than the East mouth due to deep pits and heavy rock fall in this part of the site. The East mouth trench has around 35 radiocarbon dates in the lower layers of the site beneath the cemetery phase which anchors the stratigraphy to a absolute chronology, while the West mouth awaits comprehensive dating (Lewis *et al.* 2008; Piper *et al.* 2011: 143; Szabó *et al.* 2004). Thus, the examination of the East mouth would provide a better indication of any pattern than the West mouth. Analysis of site and ceramic chronology will be based on the East mouth with the West mouth providing further information. The Ihian trench to the west of the West mouth trench is a test trench excavated to a depth of less than 1 m. No burials were excavated and the trench comprised sediment but no other cultural activities. The relationship to the other trenches is currently unknown. Though this trench yielded ceramics and the ceramics form part of the assemblage, the Ihian trench is discounted for stratigraphic analysis but the ceramics found in this trench will be considered.

The ArchEd program was used for constructing Harris matrix diagrams for the East and West mouth using the contexts which contained ceramics from the single context recording system. The contexts represented on the matrix do not reflect all the context numbers that were given or excavated. It has not been necessary to list all the contexts on the matrix because not all contexts were associated with ceramics. The focus has been on significant contexts with finds and important relationships that illustrate the associations with the ceramics, and features such as significant burials, hearths and dated contexts (see Appendix F Context Register).

While ArchEd created the diagrams showing stratigraphic relationships, the program does not join related context together. The Harris matrix was then recreated in Powerpoint to group together contexts and arrange contexts meaningfully into levels

and phases. Contexts which were grouped into levels were given 'YB level' numbers (after the author) to separate the contexts and distinguish original levels established by the Palawan Island Palaeohistoric Research Project (PIPRP) so as to differentiate between the overall project matrix and enable the project team to check the contexts at a later date. All ceramic samples from the macroscopic analysis were mapped on to the matrices to discern deposition patterns and to establish if the ceramics were associated with other material culture, how ceramics were associated with burials and what role ceramics might have played in the burial practices.

5.11 Summary

The multi-layered methods outlined above offer a combined archaeological and scientific approach to identifying and establishing variation within the Ille assemblage which can be compared to the sites in the wider Dewil Valley. The methodology was devised to test the hypothesis that a range of variability existed within the earthenware assemblage at Ille Cave and beyond. Through detailed examination of the fabric, form and surface decoration, this process focused on the micro-phenomena of technological practice not usually discussed in Southeast Asian ceramics. Ceramic variations were then classified into wares and types to be able to distinguish differences within the assemblage that might constitute learning traditions. The Ille assemblage was then contextualised within a wider understanding of the site, within its burial and funerary practices and the material culture, to inform on wider social practices at the site. The results of the research are presented in Chapter 6. Detailed reports of the results of the ceramic analysis, petrography report, rice temper report and context register are included in the appendices. Chapter 7 presents interpretations and discussion of the ceramics.

6. Ceramic and Contextual Analyses

Ceramic variation is evident in the Ille earthenware assemblage. The degree to which the variation occurs is examined as an outcome of difference in technological practice. This chapter introduces the Ille sample from the 2004-2008 assemblage and the results of the macroscopic and microscopic analyses according to the theoretical challenges and methods detailed in Chapters 4 and 5. The ware and type categories which contribute to the identification of technological practices and learning traditions are presented, as are suggestions for possible provenance. Along with an analysis of the earthenware excavated in other years and the high-fired ceramics (Appendix A), earthenware from the Dewil Valley and wider El Nido (Appendix B) and the analysis of the site stratigraphy (Appendix E and F), the results provide the basis for the discussion of the social and mortuary practices of the peoples who used Ille Cave.

6.1 Ceramic quantities and sampling

6.1.1 Ceramic quantities from Ille Cave 2004-2008

Quantification was based on morphological features and whether the sherds were decorated or undecorated (Balbaligo 2010a). These categories were undecorated body (1); decorated body (2); rim (3), carination (4) and other (5). Category (5) comprised vessel parts which did not fit into any of the above categories such as handles and lids. All sherds were examined then counted. The total number of earthenware sherds excavated between 2004 and 2008 was 17,693 (table 6.1). This quantification method of the 2004-2008 Ille assemblage contributed to providing an overall description of the basic characteristics of the studied assemblage and was used as the basis to develop a sampling strategy.

Morphological vessel element	Sherds in assemblage	Sherds sampled	% of total sample (1902)	% of total 2004-2008 assemblage (17,693)
Undecorated body	15,572	832	5.34	4.70
Decorated body	658	473	71.88	2.67
Rim	1,210	501	41.40	2.83
Carination	239	82	34.31	0.46
Other	14	14	100.00	0.08
Total	17,693	1902	-	10.75

Table 6.1 Quantification of earthenware sherds at Ille Cave based on morphological features.

Morphological vessel element	Number of sherds	Sample of 1902 sherds	% of total sample (1902)	% of total 2004-2008 assemblage (17,693)
Rim	1210	501	41.40	2.83
<i>Of which are undecorated</i>	-	251	20.74	1.42
<i>Of which are decorated</i>	-	250	20.66	1.41
Undecorated carination	239	82	34.31	0.46
<i>Of which are undecorated</i>	-	26	10.88	0.15
<i>Of which are decorated</i>	-	56	23.43	0.32
Totals	1449	1166	151.43	6.59

Table 6.2 Quantification of undecorated and decorated rims and carinations at Ille Cave.

6.1.2 Ware and type ceramic quantities

The earthenware was quantified at 17,693 sherds. A stratified systematic sampling strategy was then carried out and used to identify and select examples representing the full range of fabrics, forms, decorations and manufacturing techniques throughout the site (see 5.5.1). From the initial quantification, decorated sherds, rims and carinations were favoured as the most representative. A range of distinctive undecorated fabrics and body sherds with surface colouration were selected from secure contexts and those with no context, as well as bags which contained tens and hundreds of sherds from secure contexts which could be used for vessel reconstructions. In the time available, 1902 sherds or 10.75% of the total 17,693 sherds excavated between 2004 and 2008 were sampled for macroscopic analysis

(table 6.1). The rims and carinations were further divided into undecorated and decorated sherds (table 6.2).

From this sample, sherds were selected with the stratified systematic sampling strategy and characterised into ware and type categories to be able to assess variability in the overall assemblage. At a preliminary level, at least two ware categories were identified with correlating fabric, form, decoration and manufacturing technique, and there was a bias towards selecting those sherds (Red Ware – Types 1 to 3, Grey Ware – Type 4, see table 6.3). The formation of ceramic types with correlating attributes was an iterative process throughout the research. At least 11 ceramic types have been established (Types 1 to 11, see tables 6.3 and 6.4). Once types had been identified, it was clear which types could be categorised further into subtypes based on differences of fabric, form or decoration. Nine other groups with correlating attributes have been categorised. These groups have the potential to be categorised as types based on their form (Potential Types 12 to 16, see table 6.10). However, at this stage of the investigation, there is too little information to confirm these as distinct types and they are, therefore, referred to as ‘Potential Types’. Potential types 17 to 20 are undecorated body sherds with distinctive fabrics but without other correlating attributes and have the potential to be assessed as further types or be attributed to types already established (table 6.11). Sherds which did not share any attributes with types 1 to 11 or potential types 12 to 20 but were significant either for their form, decoration or manufacturing technique, were counted in the ‘Decorated: No Type’ category. These also have the potential to form further types and subtypes. It is acknowledged that there are some limitations with these categorisations. The broad categories of the main types are clear, but potential types may need refining in the future. However, any potential overlap is inherent in any pottery classification. The very broad divisions created in the field will be measured against the thin sections in the later stages. Tables 6.3 to 6.5 provides the tabulation of the wares, types and subtypes, showing the number of examples of each present within the sample, and incorporates quantification, as carried out during post-excavation analysis at the University of the Philippines.

Ware	#	Type	#	Subtype	Number of sherds in sample (total=1902)	% of subtype within the sample group of each type	% of total sample (total=1902)
Red ware	1	Red-Slipped Decorated			355		18.66
			1i	Foot rim	71	20.00	3.73
			1ii	Foot rim	8	2.25	0.42
			1iii	Foot rim	10	2.82	0.53
			1iv	Foot rim	4	1.13	0.21
			1v	Foot rim	7	1.97	0.37
			1vi	Mouth rim	21	5.92	1.10
			1vii	Body	189	53.24	9.94
			1viii	Carination	25	7.04	1.31
			1ix	Join	6	1.69	0.32
			1x	Other	14	3.94	0.74
Red ware	2	Red Ware Decorated			11		0.58
Red ware	3	Red Ware Plain			100		5.26
			3i	Foot rim	19	19.00	1.00
			3ii	Foot rim	2	2.00	0.11
			3iii	Foot rim	4	4.00	0.21
			3iv	Foot rim	2	2.00	0.11
			3v	Restricted rim	43	43.00	2.26
			3vi	Unrestricted rim	11	11.00	0.58
			3vii	Other	4	4.00	0.21
			3viii	Joins	4	4.00	0.21
			3ix	Body	8	8.00	0.42
			3x	Body (Red fabric F2)	3	3.00	0.16
Grey ware	4	Grey Cord Marked			64		3.36

Table 6.3 Quantification of Red and Grey wares, types and subtypes at Ille Cave. The total of 1902 sherds was sampled from the 17,693 sherds excavated at Ille between 2004 to 2008.

#	Type	#	Subtype	Number of sherds in sample (total=1902)	% of subtype within the sample group of each type	% of total sample (total=1902)
Paddle Impressed Types and Subtypes						
5	Bound paddle			88		4.63
		5i	Loose Cord Marked F4	29	32.95	1.52
		5ii	Loose Cord Marked F12	11	12.50	0.58
		5iii	Tight Cord Marked F3	33	37.50	1.74
		5iv	Other	15	17.05	0.79
6	Carved Paddle			59		3.10
		6i	Carved Paddle F4	29	49.15	1.52
		6ii	Carved Paddle (Rice) F9	6	10.17	0.32
		6iii	Carved Paddle (White) F8	11	18.64	0.58
		6iv	Carved Paddle F11	12	20.34	0.63
		6v	Other	1	1.69	0.05
Tool Decorated Types and Subtypes						
7	Impressed restricted rim			61		3.21
8	Incised Triangles			28		1.47
		8i	Incised Triangles F7	12	42.86	0.63
		8ii	Incised Triangles F11	16	57.14	0.84
9	Shell impressed			12		0.63
10	Incised, impressed, infilled			12		0.63
11	Painted			7		0.37
	Decorated: No Type			86		4.52

Table 6.4 Quantification of Paddle Impressed and Tool Decorated Types and Subtypes at Ille Cave. The total of 1902 sherds was sampled from the 17,693 sherds excavated at Ille between 2004 to 2008.

#	Potential Type	#	Subtype	Number of sherds in sample (total= 1902)	% of subtype within the sample group of each type	% of total sample (total= 1902)
Undecorated forms						
12	Pedestal bowl			17		0.89
		12i	Pedestal bowl F7	6	35.29	0.32
		12ii	Pedestal bowl	10	58.82	0.53
		12iii	Other	1	5.88	0.05
13	Large brown rim			8		0.42
14	Restricted rim			137		7.20
15	Unrestricted rim			27		1.42
16	Flat triangular lip			9		0.47
Undecorated fabrics						
17	Brown fabric			2		0.11
		17i	Brown fabric F5	1	50.00	0.05
		17ii	Brown fabric F4	1	50.00	0.05
18	Buff fabric			3		0.16
19	Rice temper fabric			4		0.21
20	Body Sherds Uncategorised			812		42.69

Table 6.5 Quantification of Undecorated pottery at Ille Cave with the potential to be a type. The total of 1902 sherds was sampled from the 17,693 sherds excavated at Ille between 2004 to 2008.

6.2 Introduction to the ceramic analysis

The ceramic analysis identified a range of variability and this enabled the ceramics to be grouped together as a means to describe variation and formed a classification of wares, types and subtypes. The purpose of the formation of wares, types and subtypes was to assess different groups of practice and order the ceramics demonstrating groups based on technological practices such as fabric and processing of raw materials, and forming and decorative techniques. The formation of wares and types also allows direct comparison with other ceramics from sites in the Dewil Valley and provides a basis for comparison with wares and types previously published for other Southeast Asian ceramic assemblages. This has the potential to allow investigations into how ceramic variability relates to other learning traditions, communities of practice and social processes in wider Southeast Asia. Tables 6.3, 6.4 and 6.5 lists the ware, type and subtype categories and gives a quantitative breakdown. Macroscopic analysis was undertaken on these samples and microscopic analysis on a further sample.

6.3 Summary of fabrics

A fabric group has a specific combination of inclusions, clay matrix and voids and differs in a significant way from others in the sample (Quinn 2013: 77). From the macroscopic analysis, preliminary categories of fabrics were created based on attributes of paste composition including fired colour, inclusions and temper, texture, hardness, porosity and surface finish. However, there was a limit to the extent that similar fabrics could be identified by macroscopic examination. From the stratified systematic sample, 44 earthenware sherds, representing different wares and types from the studied assemblage, were selected for thin section to contribute towards the classification of sherds, to assess the extent of similarity and difference, and to test whether variation seen between sherds in macroscopic observation corresponded at a microscopic level. Petrography also enabled a degree of provenance ascription. Full textural analysis is provided in Appendix C Petrography Report.

From the thin section analysis, 10 fabrics were evident specifically based on raw materials, clay matrices and tempering technology (table 6.6). However, not all types could be attributed to Fabrics 1 to 10. There were at least two macroscopic fabrics in the sample that were not thin sectioned. These have been called 'Fabric 11: Light brown fabric' and 'Fabric 12: Fine dark brown fabric' (table 6.6). Fabric 11 shares its fired colour with Fabrics 3, 4, 5 and 6 and coarse alluvial sediment is visible in some samples. However, in macroscopic analysis, it is difficult to determine which fabric it is. Therefore, the description of Fabric 11 signifies it has the same fired colour and alluvial sediment inclusions as Fabrics 3, 4, 5 and 6 and, therefore, may be related, but at this stage without further thin sectioning it cannot be differentiated. Fabric 12 shows dark brown fine clay. Some samples have coarse quartz sand and rock inclusions and some do not. This fabric is macroscopically different to samples 1 to 11 in terms of fired colour, texture and finish. However, a thin section was not taken of this fabric. During the research, it was not possible to provide a comprehensive thin section of all the types. Therefore, there may be more fabrics in the overall assemblage.

6.4 Summary of wares

As discussed in the Methodology Chapter 5, in Southeast Asia 'wares' are often used without consistent definition and uncritically. However, the idea of wares has been predefined external to this research. This research defines 'wares' to mean ceramics groups related to wider regional styles that have previously been identified, and can be distinguished by its exterior visual characteristics, such as fired colour, and used as a higher level of ordering. It is a hierarchical category above a type. In particular in Southeast Asia, 'red ware' and 'grey ware' are terms used to describe wares whose fired colour were red and grey. Within the wider assemblage, two wares were established and form a large part of the sample; 'Red Ware' and 'Grey Ware' (table 6.1). These wares were prominent and distinct in the studied assemblage, they have significant representation and similar examples of these wares have been identified in wider Southeast Asia.

Fabric	Name	Description	Dominant inclusions/temper
Thin section and macroscopic analysis			
1	Grog and chert fabric	Iron rich clay with coarse sand sized chert, rock inclusions, quartz inclusions, grog temper, red-slip	Coarse sand sized chert (common) and quartz inclusions, grog temper
2	Grog, quartz and chert fabric	Iron rich clay with coarse sand sized grog temper, quartz inclusions and chert	Coarse sand sized grog temper, quartz inclusions and chert (few)
3	Sandstone and altered igneous fabric	Iron rich clay with coarse sand sized chert, rock inclusions and quartz inclusions	Coarse sand sized chert (common) and quartz inclusions, sandstone, altered igneous rocks
4	Grog and quartz fabric	Iron rich clay with coarse sand sized quartz inclusions, rock inclusions and grog temper	Coarse sand sized grog temper, quartz inclusions, chert (few)
5	Chert and quartzite fabric	Iron rich clay with coarse sand sized chert, quartz and quartzite inclusions	Coarse sand sized chert (common) and quartz inclusions, quartzite
6	Chert and volcanic rock fabric	Iron rich clay with coarse sand sized chert, quartz, volcanic rock fragments and grog temper	Coarse sand sized chert (common), quartz inclusions (common), grog, granite, plagioclase feldspar, serpentinite, volcanic rock fragments
7	Mica and quartz fabric	Iron rich clay with medium sand sized mica and quartz	Medium sand sized mica, quartz inclusions, chert and rock inclusions
8	Grog temper fabric	Fine clay with grog temper	Grog temper
9	Rice temper fabric	Fine clay with rice temper	Rice temper
10	Coarse quartz temper fabric	Fine clay with quartz temper	Quartz temper
Macroscopic analysis only			
11	Light brown fabric	Fired light brown clay with alluvial sand inclusions	Coarse sand sized chert, quartz inclusions and rock inclusions (alluvial sand inclusions)
12	Fine dark brown fabric	Fired dark brown fine clay some with coarse sand sized quartz inclusions and rock inclusions and some without	Coarse sand sized quartz inclusions and rock inclusions/none

Table 6.6 Description of 10 fabrics (Fabrics 1 to 10) and their dominant inclusions based on macroscopic and thin section analysis, and 2 fabrics based on macroscopic analysis alone (Fabrics 11 and 12). Ceramic wares and types were ascribed to one of the twelve fabrics.

Ware	Type no.	Type	Sub-type no.	Subtype/ form element	Fabric no.	Fabric name
Red Ware	1	Red-Slipped Decorated	1i	Foot rim	1	Grog and chert fabric
			1ii	Foot rim	1	Grog and chert fabric
			1iii	Foot rim	1	Grog and chert fabric
			1iv	Foot rim	1	Grog and chert fabric
			1v	Foot rim	1	Grog and chert fabric
			1vi	Mouth rim	1	Grog and chert fabric
			1vii	Body	1	Grog and chert fabric
			1viii	Carination	1	Grog and chert fabric
			1ix	Join	1	Grog and chert fabric
			1x	Other	1	Grog and chert fabric
Red Ware	2	Red Ware Decorated	-	-	1	Grog and chert fabric
Red Ware	3	Red Ware Plain	3i	Foot rim	1	Grog and chert fabric
			3ii	Foot rim	1	Grog and chert fabric
			3iii	Foot rim	1	Grog and chert fabric
			3iv	Foot rim	1	Grog and chert fabric
			3v	Restricted rim	1	Grog and chert fabric
			3vi	Unrestricted rim	1	Grog and chert fabric
			3vii	Other	1	Grog and chert fabric
			3viii	Joins	1	Grog and chert fabric
			3ix	Body	1	Grog and chert fabric
			3x	Body (Red fabric F2)	2	Grog, quartz and chert fabric
Grey Ware	4	Grey Cord Marked	-	-	10	Coarse quartz temper fabric

Table 6.7 Red and Grey Wares established at Ille Cave with types (1, 2, 3 and 4) subtypes and fabrics within the ware category.

6.5 Red Ware

The group of sherds identified as Red Ware are visually distinctive and prominent in the studied assemblage. This ware is named after its dominant feature which is its fabric, specifically the red fired colour. Red Ware is also used to describe other fired red ceramics in Southeast Asia and has been related to the pottery of the Austronesians (Bellwood 1978, 1997, 2005). There are three distinct types: 'Type 1: Red-Slipped Decorated' and 'Type 3: Red Ware Plain'. Both types have a range of variability within the types and can be divided into sub-types. There is also a smaller group 'Type 2: Red Ware Decorated'. Thin section analysis clearly shows that Type 1 is red-slipped. However, macroscopic analysis does not show whether red-slip was present on Types 2 and 3. Types 1 and 2 are decorated while Type 3 is undecorated (figs. 6.1a-c).



Fig. 6.1 Red Ware: Types 1, 2 and 3. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.1a Type 1: Red-Slipped Decorated, subtype 1i (Accession number: IV-1998-P-13943, see also fig. 6.55 for discussion of c stamping)

Fig. 6.1b Type 2: Red Ware Decorated (IV-1998-P-14463)

Fig. 6.1c Type 3: Red Ware Plain (IV-1998-P-43411)

6.5.1 Type 1: Red-Slipped Decorated

Type 1 is a pedestal bowl which is usually interpreted as being for ritual offerings or votive functions (*cf.* Valdes 2003a). Although there is a range of variations in terms of form, decoration and firing, it has distinctive correlating attributes. All members in this type have the same fabric as proved in macroscopic examination and petrographic analysis (Fabric 1: Grog and chert fabric). This group of sherds is characterised by the red-slip which is present on all sherds. In thin section, a clearly defined slip with strong orientation parallel to the vessel's surface is optically distinct from the fabric,

especially in polarised light (figs. 6.2a-b). Red-slipping is an important defining feature. It is a specific technological feature, visually conspicuous, and potentially socially meaningful (*cf.* Peralta 2000).

Though the fired colour of the sherds varies from light to dark, they are all in the same range of reddish brownish orange (light red 2.5YR 6/6 to reddish brown 5YR 4/3; Munsell 2010). The clay is iron rich and fired in the same oxidising environment which gives it its colour. The sherds have coarse inclusions of commonly occurring chert, few rock inclusions of basalt, serpentinite and altered igneous rock and rare quartz grains. The vessels are grog tempered containing fine quartz grains in the same proportion as in the ceramic matrix and that is similar in composition and arrangement as the parent fabric. This shows the grog temper is made from the same clay material as the vessel and, therefore, made from recycled ceramics from the same production environment (figs. 6.2c-d).

Variations in form and the vessel elements have been divided into subtypes (1i to 1x). The excavated sherds show variations in the overall shape of the pedestal bowls and variations in rim and lip form due to the shaping of the mouth and foot rims. There are at least 5 variations of foot rim which show different finishing on the rim and lip of the vessels (Foot rim subtypes 1i to 1v; figs. 6.3a-e and fig. 6.4). Two forms of foot rims are also found: the 'standard' pedestal bowls (fig. 6.3a and 6.3c) and a tall and cylindrical form (fig. 6.3b). Fig. 6.3e shows a large foot rim with proportionally large c stamps.

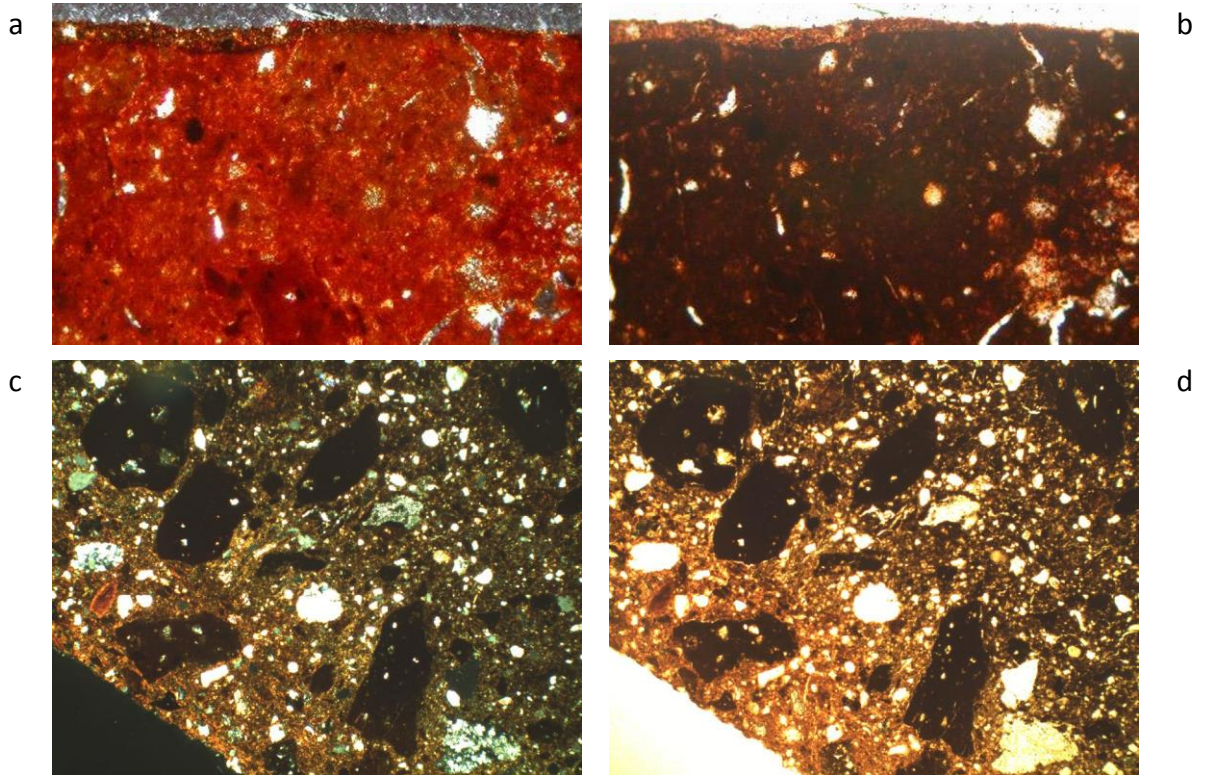


Fig. 6.2 Photomicrographs of Type 1: Red-Slipped Decorated, Fabric 1 (image: Y. Balbaligo)

Figs. 6.2a-b Red-slip visible on external edge of thin section (IV-1998-P-888003, sample 022). XP/PPL. Image width = 1.45 mm.

Figs. 6.2c-d Few coarse sand sized grog temper inclusions with the same composition and arrangement as the parent fabric showing it is made from same clay material, few medium and fine sand sized quartz inclusions with coarse sand sized chert and altered basalt rock fragment (IV-1998-P-27359, sample 032). XP/PPL. Image width = 2.9 mm



Fig. 6.3 Type 1: Red-Slipped Decorated foot rims and subtypes. Image scale = 0-5 cm (images: Y. Balbaligo)

Fig. 6.3a Type 1, subtype 1i, rounded rim and lip (IV-1998-P-43628)

Fig. 6.3b Type 1, subtype 1ii, long rim (IV-1998-P-35996)

Fig. 6.3c Type 1, subtype 1iii, parallel lip (IV-1998-P-17858)

Fig. 6.3d Type 1, subtype 1iv, flat and raised (IV-1998-P-41588)

Fig. 6.3e Type 1, subtype 1v, large and rounded (IV-1998-P-37150, compare with fig. 6.56a showing variations in size and regularity of c stamp)

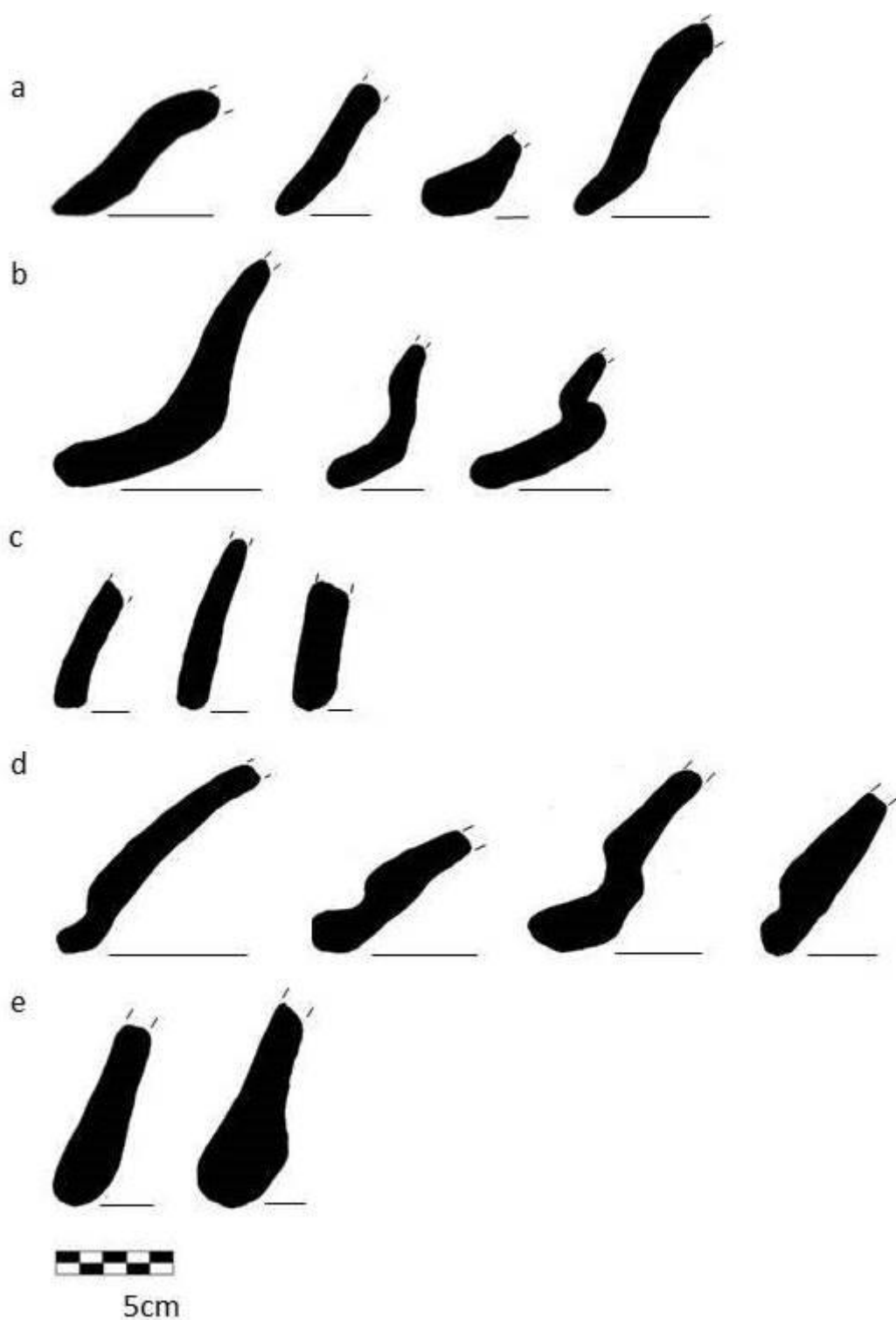


Fig. 6.4 Type 1: Red-Slipped Decorated foot rims and subtypes 1i to 1v in profile. Fives variations of foot rim form showing different finishing on the rim and lip of the vessels (images: Y. Balbaligo)

Fig. 6.4a Subtype 1i Foot rim - Rounded rim and lip

Fig. 6.4b Subtype 1ii Foot rim - Long rim

Fig. 6.4c Subtype 1iii Foot rim - Parallel lip

Fig. 6.4d Subtype 1iv Foot rim - Flat and raised

Fig. 6.4e Subtype 1v Foot rim - Large and rounded

Following Summerhayes (2000: 33-36), all mouth rims (subtype 1vi) were identified as coming from unrestricted open bowls with outward rim and wall orientations (fig. 6.5a). The rim direction is direct (straight) in that it follows the outline of the vessel with no change in direction or contour. The rim profiles are convergent with usually flat horizontal rim features and long interior rim lip and the lip profiles are rounded (figs. 6.5b-c). Few have corner articulation or points (figs. 6.5d-e). The incised and impressed decoration and differences in surface finish of the interiors of the mouth and foot rim indicate how to orientate the sherds. The bowls are wide and shallow and the interior of the mouth rims are smooth and highly polished. It is likely that more time was spent on the interior of the vessel as this is where the offerings were placed and this part of the vessel is exposed. It is evident from surviving bowl joints and other pedestal foot bowls vessels that the bowls and rings are made separately and joined together.

Some sherds classified in this type were undecorated body sherds (subtype 1vii) but could be confidently identified to Type 1 based on its distinct fabric and surface finish. It is likely that these sherds would have been from the undecorated part of the vessel and examples are shown below as there were some parts of the mouth rims which were not decorated. Other vessel elements found include carinations (subtype 1viii; figs. 6.6a-b), bowl joins (subtype 1ix; figs. 6.6c-d), and an 'other' category (subtype 1x) for unidentified forms such as handles (figs. 6.6e-f) and a one off sherd, so far, that could be a lid (fig. 6.6g). It is unknown what the rim of the vessel would have looked like and where on the vessel these elements might have originated from as none of the surviving vessels show breakage points. No vessel survives in its entirety, therefore, complete forms are not known. All the rim sherds excavated break above the rim so the full height of the foot rims cannot be calculated.



Fig. 6.5 Type 1: Red-Slipped Decorated mouth rims. Image scale = 0-5 cm (images: Y. Balbaligo)

Fig. 6.5a Mouth rims profiles of Type 1: Red-Slipped Decorated, subtype 1vi. Variation of mouth rim forms

Figs. 6.5b-c Type 1: Mouth rim, subtype 1vi. Rim profile is convergent with usually flat horizontal rim feature and long interior rim lip. Lip profiles are rounded. Remnants of white calcium carbonate infilling in the incised horizontal bands and impressed s stamps (c stamps variation 4; IV-1998-P-24005)

Figs. 6.5d-e Mouth rim, subtype 1vi. Corner articulation in profile. Horizontal bands either side of consecutive c stamps (c stamp variation 1). No infilling visible in decoration (IV-1998-P-41822, compare with fig. 6.58a-b showing smooth surface finishing on interior and exterior)

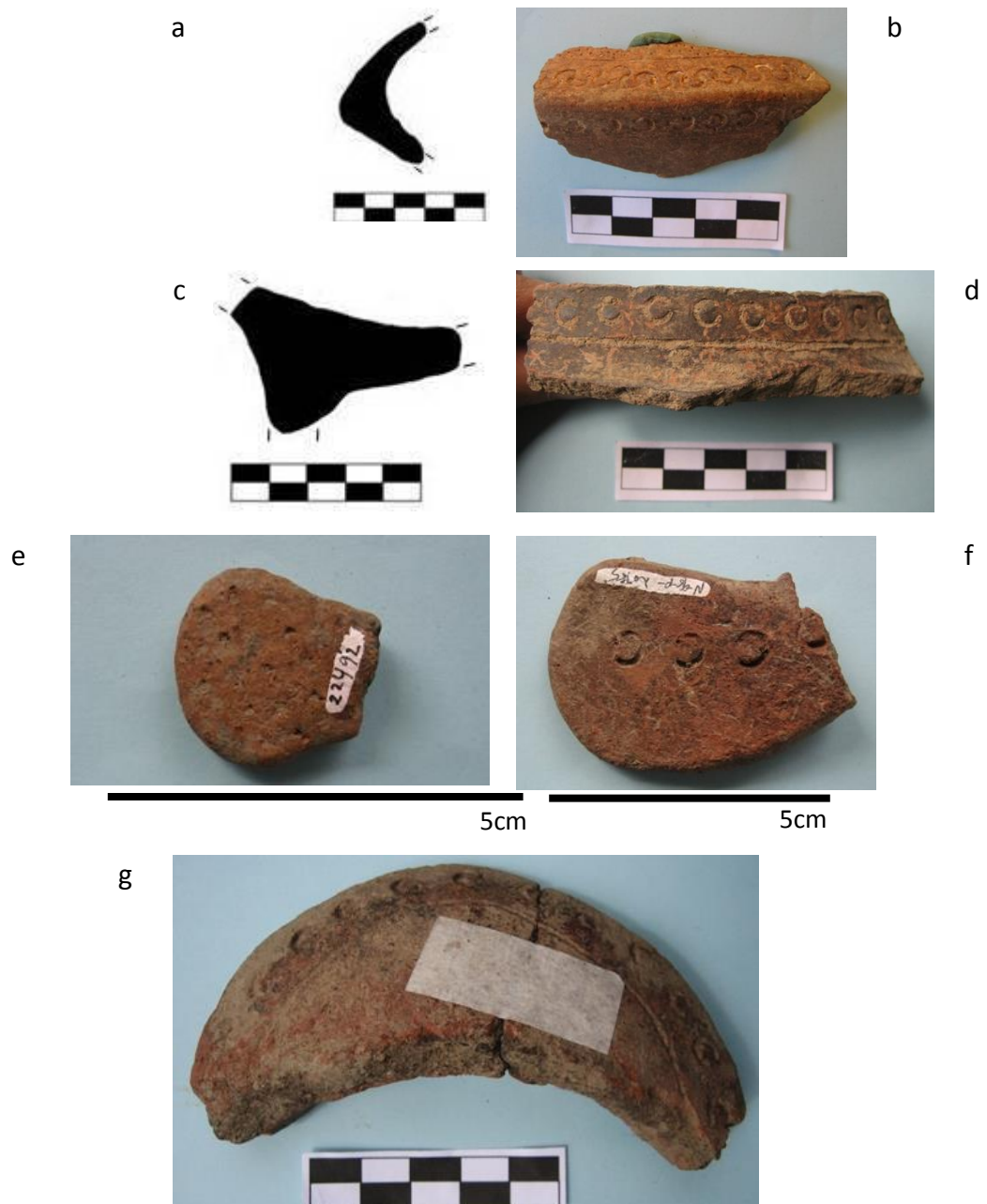


Fig. 6.6 Type 1: Red-Slipped Decorated range of form elements. Image scale = 0-5 cm (images: Y. Balbaligo)

Figs. 6.6a-b Subtype viii, profile and exterior carination protruding outwards with a sharp carination and the interior follows the shape and with a corner point (IV-1998-P-42812)

Figs. 6.6c-d Subtype 1ix, profile cross section of join break and exterior showing join connecting the upper bowl and the foot ring (IV-1998-P-36025)

Fig. 6.6e Subtype 1x, small handle appendage (IV-1998-P-22492)

Fig. 6.6f Subtype 1x, large handle appendage (IV-1998-P-20785)

Fig. 6.6g Subtype 1x, possibly a lid or cover (IV-1998-P-19735)

Exterior surfaces are generally smoothed and highly polished. However, some foot rims are crude and uneven without polishing. The decorations that occur on these sherds are unique to this type and do not occur on other pottery types at Ille. All the surface decorations have a certain style; the recurring motifs are the most visually defining diagnostic attribute for this pottery type. The most common recurring motif is what looks like 'c' stamps. These stamps are impressed into the pottery (not incised) and made with the circular tip of a reed or small bamboo. Figs. 6.7a to 6.7d show the four variations of c stamps. They appear: separately and consecutively both horizontally and diagonally (1), separately and facing each other (2), joined and alternating (3), and joined in an 's' stamp shape (4). The c stamps are not found in any other formation. Red fired c stamped ceramics from Linaminan, southern Palawan are only found consecutively (*cf.* fig. 3.8, Chapter 3). The c stamps occur mostly across the mouth and foot rims and close to the rim edge. On the mouth rims, the c stamps are delimited by horizontal bands with significant blank space between horizontal the bands and the next register of decoration (see figs. 6.5c and 6.5e). The blank spacing between decorations, along with the form and highly polished smooth interior surface, indicate that these sherds are unquestionably mouth rims forming the bowl.

Distinct curved and linear lines are incised forming geometric shapes and punctates are impressed with a modified pointed instrument such as bamboo or wood (figs. 6.7e-f). Some examples of incised designs include straight lines in varying styles, some parallel to each other as well as forming patterns such as V-shapes, cross-hatchings and geometric shapes, such as triangles, rhombuses and 'leaf' like shapes. 'Leaf' patterns are also found in Agop Atas, Madai, Sabah, and described as "an oval divided lengthwise by a straight line" (Harrison and Harrison 1971: 192). The incised lines and punctates vary in depths. Precision of lines and puncture marks also varied. There are varying degrees of fineness and coarseness in the decorations. This type of decoration does not occur with any carved or cord marked paddles. The c stamps and associated designs are not found on any rounded restricted vessels. They are only found on vessels with foot rims, pedestals and cylinder forms. Remnants of white infilling are found in some of the incised and impressed grooves which effervesced when exposed to dilute hydrochloric acid (10% HCl) which indicates it is a form of

calcium carbonate. Variations in firing are discussed in section 6.14.6 below). Type 1 was fired in an oxidising environment. The majority of sherds in profile show thin margins with a grey core due to the insufficient penetration of oxygen during firing. This indicates that iron and organic matter was not oxidised due to insufficient temperature and a short firing duration.

Summary of correlating attributes for Type 1: Red-Slipped Decorated	
Fabric	Fabric 1: Grog and chert fabric Fired red colour Iron rich clay Alluvial sedimentary inclusions (dominant chert) Grog temper
Form	Pedestal bowls only
Surface treatment	Surface finish – red-slip, smoothing and polishing Surface decoration – incised and impressed decorations, similar geometric shapes and punctates, c stamps White infilling
Manufacture	Hand fashioned Two stage process – bowls attached to foot ring Oxidising firing atmosphere

6.5.2 Type 2: Red Ware Decorated

This type is not a homogenous group. Unlike Type 1, there are few correlating attributes for this type and it is small in number. However, this type is typified by its fabric, matte surface finish, firing and surface decoration. Its red fired colour is an indicator of iron content in the clay body and firing conditions, and this type has been classified by surface decorations to distinguish it from 'Type 3: Red Ware Plain'. However, there is a caveat for this type. It is dependent on where the sherd broke which determines if it is in Type 2 or Type 3 category. Although an undecorated body sherd might have been part of a decorated vessel, it may have been classified as Type 3.



Fig. 6.7 Type 1: Red-Slipped Decorated range of decorative elements. Image scale = 0-5 cm (images: Y. Balbaligo)

Fig. 6.7a C stamps impressed separately and consecutively both horizontally and diagonally (c stamp variation 1; IV-1998-P-43626)

Fig. 6.7b C stamps impressed separately and facing each other (2; IV-1998-P-17446)

Fig. 6.7c C stamps impressed joined together and alternating (3; IV-1998-P-19544)

Fig. 6.7d C stamps impressed joined in a 's' stamp shape (4). Remnants of white calcium carbonate infilling (IV-1998-P-20757)

Fig. 6.7e Horizontal bands and decorations with curved and straight incisions, punctates which run horizontally and vertically in columns (IV-1998-P-42393)

Fig. 6.7f Curved designs showing incised lines forming geometric shapes which are leaf-like with punctates outside or inside the curved design (IV-1998-P-23831)

Macroscopic analysis only was undertaken as the sample was too small for petrography and petrography was limited to other types of more significance. Without thin section analysis it is difficult to state whether fabrics were from the same clay source and treated the same way. However, the alluvial sediment inclusions of quartz and rock fragments were similar to Type 1. Grog temper is not visible but it does not mean it is not present. Because of the similarity of the natural inclusions, based on macroscopic analysis it is likely that this fabric is related to Type 1.

In terms of form, the surviving sherds are mostly restricted rim with few body sherds and sharp carinations. All the restricted vessels are convergent with rounded lips profiles and most are outcurving. All restricted rims were similar in size. No decorated unrestricted rims have been found. 'Type 3: Red Ware Plain' has been classified as they all lack decoration.

Without petrography or further analysis, it is not possible to observe whether the surface of the sherd was slipped. Unlike Type 1, the decorations of Type 2 are not similar to each other, with no two examples having exactly the same style of decoration. It is likely that there would be vessels with similar decoration, but the small range of samples appear to have no comparable examples so far. Geometric shapes are incised and with some stamping marks (figs. 6.8a-b and 6.8c-d). No remnants of infilling were found in any of the grooves of the decorations. Neither the full height nor complete decoration of the vessel can be estimated from the fragments of rims. Unlike Type 1, most of the cross sections of the sherds did not show a grey fired core and no margins, thus, it is likely that the ceramics were fired in an oxidising environment and the organic material in the fabric was completely burnt out during the firing process due to length of firing and sustained temperature.

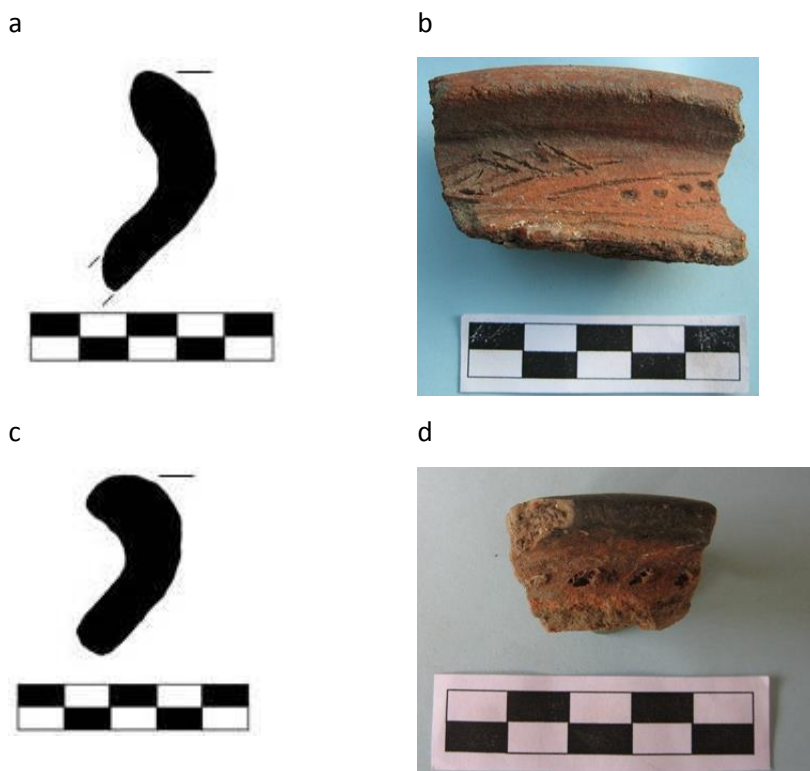


Fig. 6.8 Type 2: Red Ware Decorated. Image scale = 0-5 cm (images: Y. Balbaligo)

Figs. 6.8a-b Profile and exterior of restricted rim vessel with incised geometric shapes and punctates. Black carbon on the rim edges from firing or sooting or where the protruding rim was exposed to heat (IV-1998-P-14608)

Figs. 6.8c-d Profile and exterior of restricted rim vessel with irregular stamping. Black carbon on the rim edges from firing or sooting or where the protruding rim was exposed to heat (IV-1998-P-14656)

Summary of correlating attributes for Type 2: Red Ware Decorated	
Fabric	Fired red colour Iron rich clay Alluvial sedimentary inclusions
Form	Restricted rim vessels Carinated restricted rim vessels
Surface treatment	Surface finish – matte Surface decoration – incised geometric shapes, irregular stamped shapes
Manufacture	Hand fashioned Oxidising firing atmosphere No core margins (firing temperature regular)

6.5.3 Type 3: Red Ware Plain

This type is typified by its fired colour, matte surface finish and firing. Type 3 is most comparable to Type 2 for these reasons, rather than Type 1, but is undecorated hence the term 'plain'. One thin section sample shows that no red-slip is present, though further petrography may show otherwise. This type is problematic as the sherds in this type may be the undecorated portion of a decorated vessel. However, there are undecorated plain red vessels in the assemblage and based on macroscopic observation, there is more than one fabric evident with at least 3 variations. It is also possible that some sherds from this type may appear in Category 20: Body sherds uncategorised. Category 20 needs further investigation.

The first fabric is similar to Type 1 and Type 2 with the same variations in fired surface colour and similar alluvial sediment inclusions (but could possibly be included in Types 1 or 2; fig. 6.9a). The second fabric is darker in colour (dark reddish brown 2.5YR 3/4) containing coarser and more frequent inclusions – especially quartz sand which may have been added as temper (fig. 6.9b). It is unknown whether grog temper is present.

A third fabric has been identified by thin section (Fabric 2: Grog, quartz and chert; fig. 6.9c). This fabric is characterised by fine iron rich paste and the presence of dominant inclusions of medium and coarse sand size quartz inclusions, rock inclusions and chert (alluvial sediment) and the addition of grog temper. Figs 6.10a-d shows a micrograph comparison of Type 3 (Fabric 2) and Type 1 (Fabric 1). While the composition is similar to Fabric 1, Fabric 2 is different in that the size of the quartz grains are larger, subangular to angular (rather than rounded) and they occur more frequently in Fabric 2. The chert component is more common in Fabric 1 and occurs less in Fabric 2. It is possible the clay sources come from similar environments. However, Fabrics 1 and 2 are similar and may be part of a larger fabric group because they both have similar iron-rich paste and components. However, without extended thin section analysis it is difficult to say how many types of fabric there are or whether this type is slipped.

The forms of Type 3 include pedestal foot bowls with foot and mouth rims, restricted vessels and unrestricted vessels, and vessel elements include body sherds, bowl joins,

carinations and what might be handles. The restricted rim vessels show a variety of forms, such as cylinders and globular vessels. There are few examples of unrestricted vessels. Fig. 6.1c shows one of the few reconstructed vessels and it shares the same fabric as fig. 6.9b.

The foot rims of the pedestal bowl can be classified with the same foot rim sub-types (i-iv) as Type 1. However, sub-type large and rounded (v) does not occur. However, there are two sherds of note. Figs. 6.11a-b is the only surviving example of an extremely large pedestal foot rim (sub-type 3iii) with similar fabric to Type 1. The foot rim has been reconstructed from 4 sherds but is treated as one element. Figs. 6.11c-d shows over half a pedestal foot ring which survives intact showing how the full form of the ring foot would have looked (sub-type 3iii).

Summary of correlating attributes for Type 3: Red Ware Plain	
Fabric	Fabric 2: Grog, quartz and chert fabric Fired red colour Iron rich clay Alluvial sedimentary inclusions (dominant quartz) Grog temper
Surface treatment	Surface finish – matte Surface decoration – none
Manufacture	Hand fashioned Oxidising firing atmosphere No core margins (firing temperature regular)

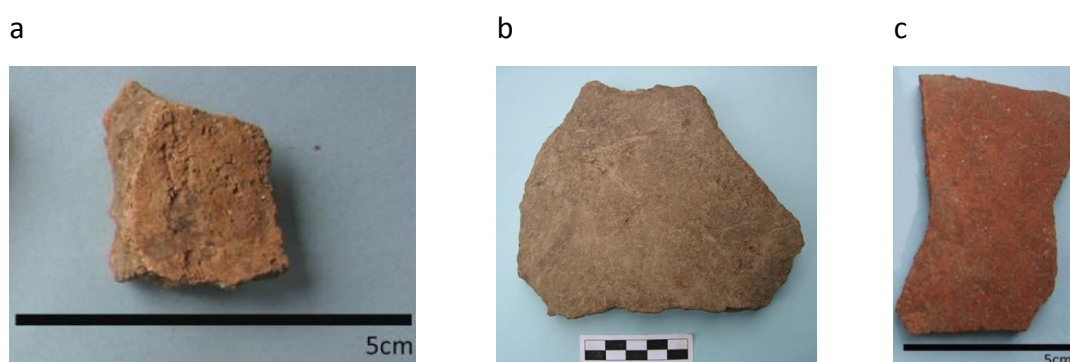


Fig. 6.9 Three variations in fabric of Type 3: Red Ware Plain. Image scale = 0-5 cm (images: Y. Balbaligo)

Fig. 6.9a Similar to Types 1 and 2 with alluvial sediment inclusions (IV-1998-P-19548)

Fig. 6.9b Dark reddish brown fabric with frequent coarse inclusions (IV-1998-P-19791)

Fig. 6.9c Coarse sand size quartz, rock and grog inclusions (IV-1998-P-19777)

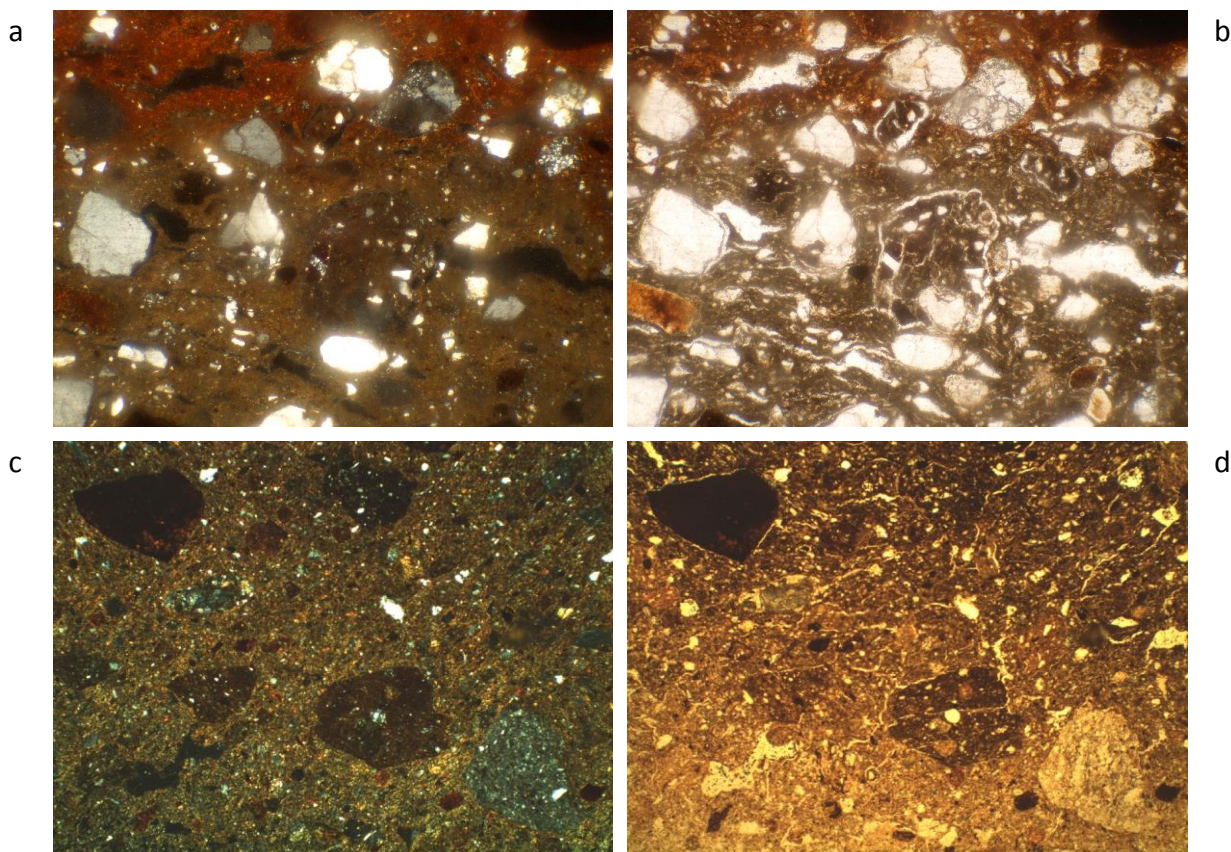


Fig. 6.10 Comparative photomicrographs showing differences between Type 3 (Fabric 2) and Type 1 (Fabric 1; image: Y. Balbaligo)

Figs. 6.10a-b Type 3: Red Ware Plain (Fabric 2), iron rich clay with dominant quartz, grog temper and rock fragments (IV-1998-P-19777b; sample 003), compared with figs. 6.10c-d Type 1: Red-Slipped Decorated (Fabric 1) iron rich clay with coarse grog temper and chert (IV-1998-P-27945; sample 025). XP/PPL. Image width = 2.9 mm



Fig. 6.11 Pedestal foot rims, Type 3: Red Ware Plain, sub-type 3iii. Image scale = 0-5 cm (image: Y. Balbaligo)

Figs. 6.11a-b Only surviving example of an extremely large pedestal foot rim, sub-type 3iii with similar fabric to Type 1. The rim has been reconstructed from 4 sherds (IV-1998-P-13906, 13927, 14035, 14036)

Figs. 6.11c-d Type 3: Red Ware Plain. Over half a pedestal foot ring which survives intact. Fig. 6.11d show how the full form of the ring foot would have looked, sub-type 3iii (IV-1998-P-23095)

6.6 Grey Ware

6.6.1 Type 4: Grey Cord Marked

The Grey Ware ceramics are visually distinctive but are fewer in number than the Red Ware (table 6.3). There is a tradition of Grey Ware ceramics in Southeast Asia and often found cord marked. Unlike the variability seen in the Red Ware, the ceramics in the Grey Ware category are homogeneous and can be classified as one type in this sample. The grey colour comes from the quality of the clay and indicates that vessels were fired in a majority reducing atmosphere which did not have enough oxygen in it to completely consume the fuel or carbon in the clay during firing. The fired colours

differed across the exterior, ranging from grey GLEY1 6/n to very dark grey GLEY1 3/n. Fig. 6.12a shows one of the largest examples and has two colours – light grey and dark grey which happened during the firing process. There are no other colours of this vessel. 'Type 4: Grey Cord Marked' has distinctive correlating attributes and is named after its dominant features: its fabric and the grey fired colour, decoration and manufacture style. Type 4 features a single design which is a product of the manufacturing process (figs. 6.12a-d).

All members in this type have the same fabric as proved in macroscopic examination and petrographic analysis (Fabric 10: Coarse quartz temper fabric). The thin sections are mostly homogenous showing very fine clay, few coarse plagioclase feldspar and granite inclusions and frequent coarse angular quartz, identified as temper due to the with low sphericity of the quartz. The samples are porous in hand specimen and in thin section. Fabric 10 is the most different to other fabrics established. Its implications for provenance are discussed below.

Cord marked impressions can clearly be seen on the exterior surface of the sherds and these were made with a bound paddle. The surface decoration is a direct result of the manufacturing process that also has an aesthetic component. They are paddle and anvil made and where the anvil was struck can be felt in the interior. The paddle was wrapped with what is conventionally called 'cord' in Southeast Asia and struck against the leather hard surface. The patterns of the cord are straight and regular. They are evenly impressed straight or overlapping in a criss-cross pattern. Most of the cords are tightly wound on the paddle with no gaps (ribs) and visible twisting and grooves. There are no other decorated features apart from these.

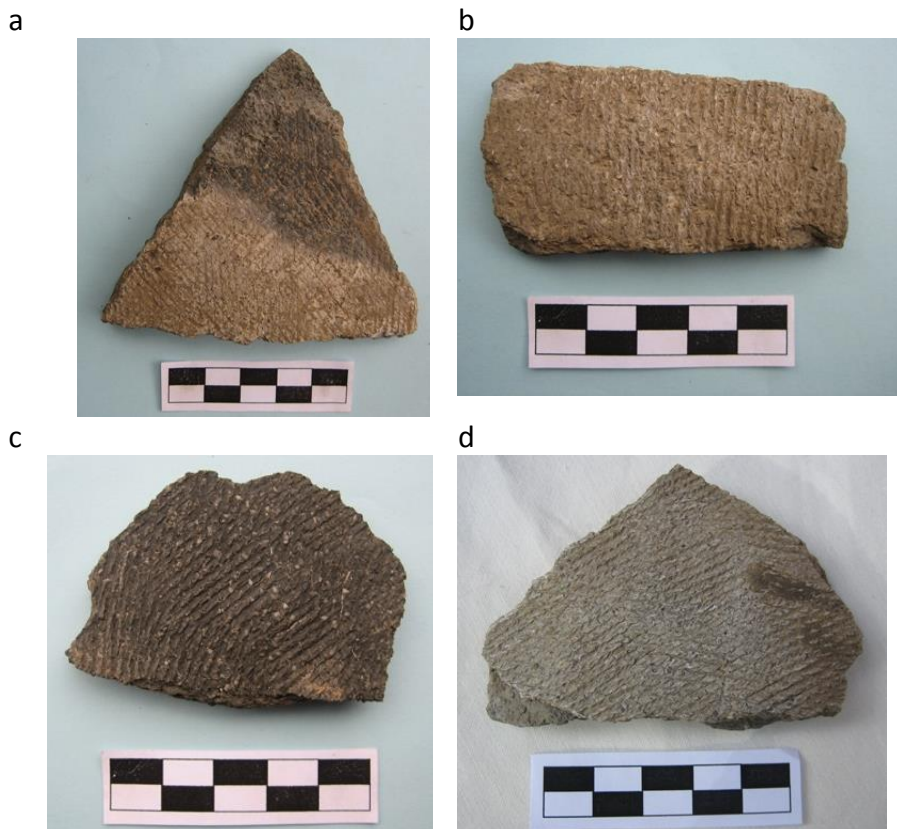


Fig. 6.12 Grey Ware: Type 4: Grey Cord Marked. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.12a One of the largest cord marked sherds, two colours showing the vessels would have differed in fired colour throughout (IV-1998-P-13956)

Figs. 6.12b to 6.12d Range of Grey Cord Marked at Ille (IV-1998-P-18612, 13976 [see also fig. 6.16c for example of bound paddle], 16167)

Some of the sherds do not have decorations depending on where the vessel broke and would appear to be Grey Ware Plain (fig. 6.14a). However, they can be identified as an undecorated portion of Type 4: Grey Cord Marked. This diagnosis is based on the fired colour and inclusions, the sherds are the same general thickness, they have the same lustre. Fig. 6.14b is an example of a sherd that has both paddle impressions and non-decorated portions. This is evidence that the vessels would not have been decorated all over and it shows how the paddle markings would have terminated. It is also light grey and dark grey and shows that colour would have varied over the entire vessel. This is the only example of its kind so far in the overall assemblage.

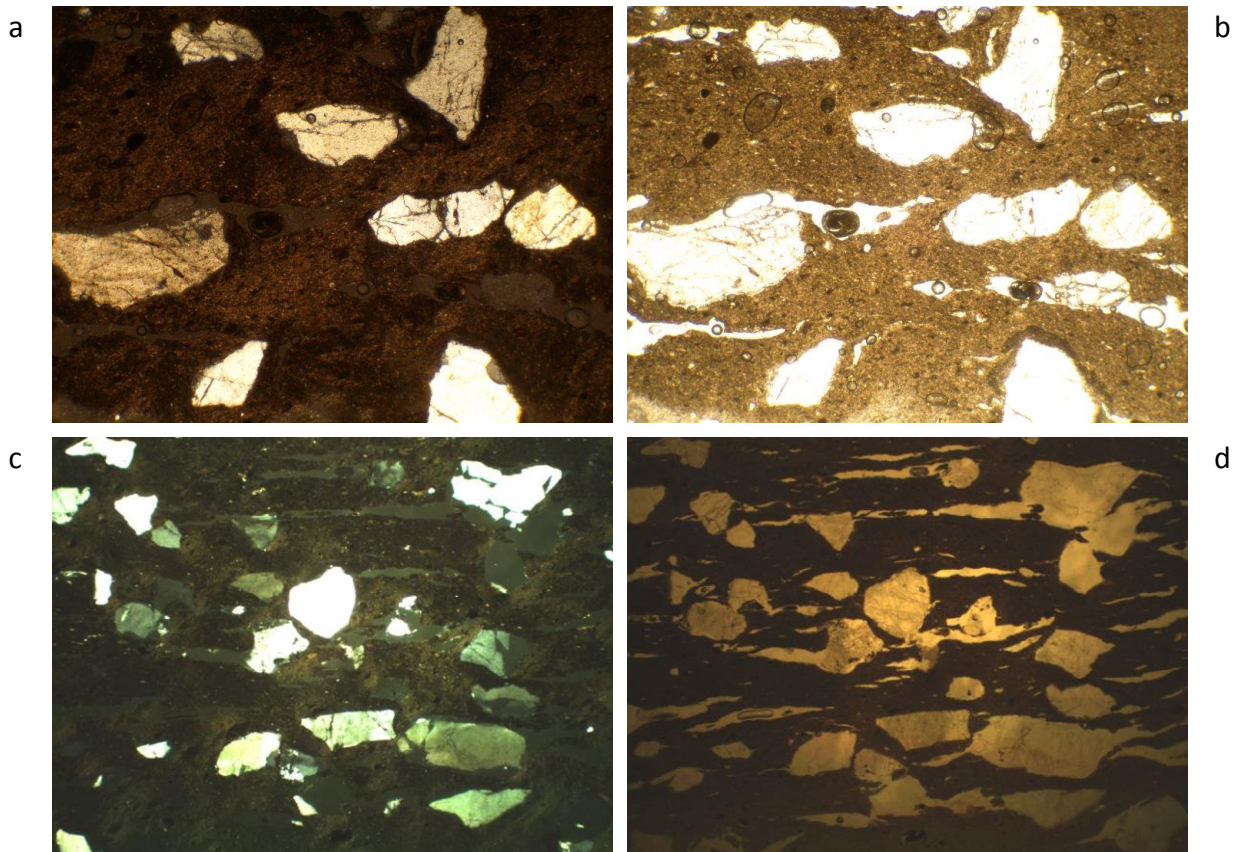


Fig. 6.13 Photomicrographs of Type 4: Grey Cord Marked, Fabric 10. Uniform fabric with very fine clay without mineral inclusions and coarse angular quartz temper, and micro-elongate parallel voids orientated in the same direction as the quartz temper (image: Y. Balbaligo)

Figs. 6.13a-b (IV-1998-P-14398, sample 007). XP/PPL. Image width = 2.9 mm

Figs. 6.13c-d (IV-1998-P-14938, sample 034). XP/PPL. Image width = 5.8 mm

All Type 4 sherds found at Ille were body sherds. No other morphologically diagnostic elements were found, thus there is no indication of what form the vessel took. Without a rim, we cannot know whether the vessel was restricted or unrestricted, we cannot know its capacity or determine its function. No rims sherds of the same fabric have been excavated at Ille or any form that can be associated with this vessel. The majority of the sherds were completely flat. The flatness of the sherds suggests that the vessels were large. Large flat sherds of Type 4 were also found at Corong Corong Rockshelter, El Nido (see Appendix B). Although no other forms elements of Type 4 were found at Ille there is a possibility that this ware was also found at Tubigen Cave, Lagen Island, to the southwest of the Dewil Valley. Body sherds (fig. 6.15a) identified to be Type 4 due to the fabric and cord marked paddle impressions showing tight cord

marking were found along with two large restricted rims from the same vessels (figs. 6.15b and 6.15c, with cord marked paddle impression under the neck of the rim. This restricted rim is most likely the rim form of Type 4. Ceramics from Tubigen Cave are discussed in Appendix B.

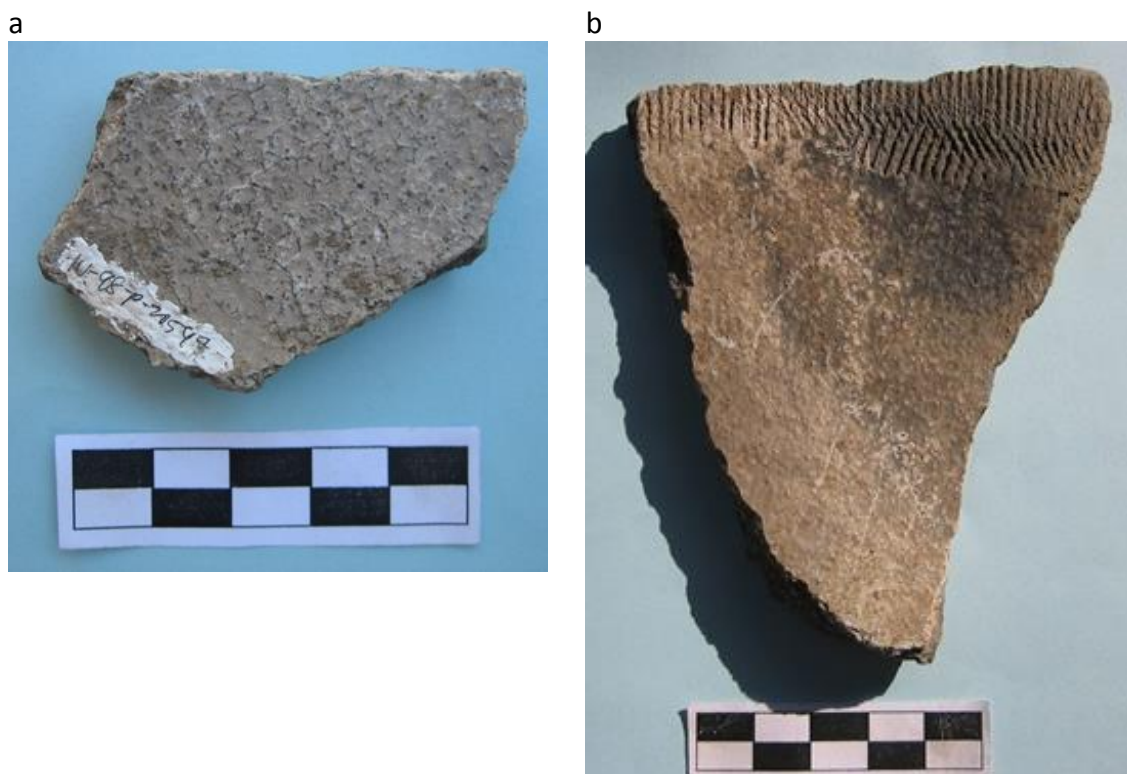


Fig. 6.14 Grey Ware: Type 4: Grey Cord Marked with undecorated portions. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.14a Nominally the exterior of an undecorated sherd. Depending on where the vessel broke, it can be identified as Type 4 based on the fired colour, quartz sand temper, wall thickness and lustre (IV-1998-P-20347)

Fig. 6.14b Only example of its kind in the overall assemblage so far. Sherd has both paddle impressions and non-decorated portions. This is evidence that the vessels would not have been decorated all over and it shows how the paddle markings would have terminated (IV-1998-P-23325)



Fig. 6.15 Type 4: Grey Cord Marked from Tubigen Cave, Lagen Island. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.15a Type 4. Cord bound paddle impressed body sherd from Tubigen Cave, Lagen Island with deeply imprinted cord marks for comparison with Type 4 from Ille Cave (IV-1998-O-10)

Fig. 6.15b Profile of a potential rim of Type 4 (IV-1998-O-5+6)

Fig. 6.15c Two large restricted rims from the same vessels with cord marked paddle impression under the neck of the rim. Possible rim form for Type 4 (IV-1998-O-5+6)

Summary of correlating attributes for Type 4: Grey Cord Marked	
Fabric	Fabric 10: Coarse quartz temper fabric Fired grey colour Very fine clay without coarse mineral inclusions Coarse angular quartz temper
Form	Flat body sherds
Surface treatment	Surface decoration – cord marked impressions with bound paddle
Manufacture	Hand fashioned, paddle and anvil Reducing firing atmosphere

6.7 Introduction to types and subtypes

This research defines ‘types’ as a local variation of a regional style identified by specific correlating attributes incorporating the forming, decorating, firing and learning techniques. Types may also have correlating fabrics. A subtype is a subdivision of a type which has similar decoration but may vary in decorative technique, fabric or in form and forming technique.

The following types are primarily ordered by decorative technique. Rather than focusing on the actual visual characteristics of the decoration, this research instead considers the decorative technique for the production of the decoration, thereby focusing on the process and practice, rather than the aesthetic outcome. Decorative techniques are always correlated to forming technique, for example, paddle impressed sherds are always found on restricted rim vessels that have been made by paddle and anvil. However, there may be variation in fabrics which are classed as subtypes. By correlating decorative technique and forming techniques, this moves identification of pottery beyond basing pottery groups solely on decoration as a visual marker. This highlights differences based on technological traditions and physical practices. Types may belong within a ware category identified in wider Southeast Asia, but cannot be identified within the studied assemblage. The majority of the sherds in the sample can be classified as types. For the decorated earthenware sherds that did not easily ‘fit’ into a category, these examples will be discussed separately as ‘Decorated: No Type’.

In the following section, analysis of ceramic types are organised by two main decorative techniques: Paddle Impressed and Tool Decorated (see tables 6.8 and 6.9). Types in these categories have correlating decorative techniques, forming technique and form. Subtypes have correlating decorative techniques and forming technique but may differ in fabric and form.

Decorative technique	Type no.	Type	Sub-type no.	Subtype/ form elements	Fabric no.	Fabric name
Paddle Impressed	5	Bound Paddle	5i	Loose Cord Marked F4	4	Grog and quartz fabric
			5ii	Loose Cord Marked F12	12	Light brown fabric
			5iii	Tight Cord Marked F3	3	Sandstone & altered igneous fabric
			5iv	Other	11	Light brown fabric
	6	Carved Paddle	6i	Carved Paddle F4	4	Grog and quartz fabric
			6ii	Carved Paddle (Rice) F9	9	Rice temper fabric
			6iii	Carved Paddle (White) F8	8	Grog temper fabric
			6iv	Carved Paddle F11	11	Light brown fabric
			6v	Other	12	Fine dark brown fabric

Table 6.8 Bound Paddle and Carved Paddle types (5 to 6) established at Ille Cave with subtypes and fabrics within the Paddle Impressed category.

6.8 Introduction to Paddle Impressed Types

As discussed in Chapter 2, the paddle impressed technique is associated with paddle and anvil forming and is ubiquitous in Mainland and Island Southeast Asia, South China and the Pacific Islands. The Paddle Impressed decorative technique has two types of paddle: Bound Paddle and Carved Paddle. The Bound Paddle impressions are made by wrapping cord fibres around a wooden paddle. When the paddle is struck against the clay wall of a vessel, a negative image of the cord is impressed into the clay. In the studied assemblage, it is mostly cord bound paddle marks that are found. The Carved Paddle impressions have designs carved into a wooden paddle and a negative image of the design on the paddle is impressed to the clay. In the studied assemblage this is mostly squares and other irregular quadrangular shapes. At present, the Bound Paddle type can be categorised into at least 4 different fabric classes and the Carved Paddle type can be categorised into at least 5 different fabric classes showing a variety of clay sources and small but perceptible differences in decorative technique for these two

types. The Paddle Impressed category shows the most technological variations for this method with a range of variation in fabric classes.

Of the Bound Paddle type, there are two ways the cord appear impressed on the sherd. The most frequently occurring is the Loose Cord Marked, while fewer Tight Cord Marked sherds were recovered.

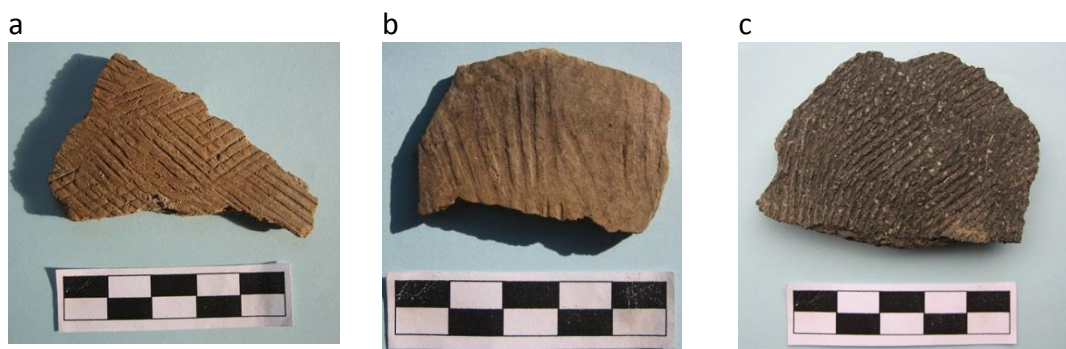


Fig. 6.16 Type 5: Bound Paddle, subtypes Siii and Si for comparison with Type 4: Grey Cord Marked. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.16a Subtype Siii: Tight Cord Marked F3 (IV-1998-P-20050)

Fig. 6.16b Subtype Si: Loose Cord Marked F4 (IV-1998-P-22270)

Fig. 6.16c Compared 6.16a and 6.16b to Type 4: Grey Cord Marked showing tight cords, (IV-1998-P-13976, see also fig 6.12c as an example of Grey Ware)

There are variations in the modification of the cord and its subsequent impression onto the plastic clay which comprise the subtype of the bound paddle type (denoted by Roman numerals) and which define its name. The terms 'Tight Cord Marked' and 'Loose Cord Marked' describe the impression the cord twists and spacing of the cords make and use Hurley's (1979, after Emery 1966) definitions. The impressions of the Tight Cord Marked sherds (fig. 6.16a) show cords that are twisted tightly and the angle of twist is tight. The cords are closed and spaced evenly around the paddle and the impressions show ribs and clear grooves. Type 4 (fig. 6.16c) is also made in this way and show similar impressions, though the cord spacing is wrapped tighter around the paddle, there is no spacing between the cords and the segments are more defined. The impressions also show ribs and clear grooves. In contrast, the impressions of the Loose Cord Marked sherds (fig. 6.16b) show cords that are twisted loosely and the angle of twist is looser. The cords are also thicker. The cords are open and spaced

further apart and unevenly around the paddle. The ribs and groove impressions are lighter and not as deeply impressed as the Tight Cord Marked sherds.

6.8.1 Type 5: Bound Paddle

- **Subtype 5i: Loose Cord Marked F4**
- **Subtype 5ii: Loose Cord Marked F12**
- **Subtype 5iii: Tight Cord Marked F3**

‘Subtype 5i: Loose Cord Marked F4’ and ‘Subtype 5ii: Loose Cord Marked F12’ show similar paddle impressions but on different fabrics. However, the paddle impressions are not standardised. Each of the paddles was bound differently. The cord marks of the subtypes vary in terms of the thickness of the bound cord and the spacing of the cord. However, all cords are wound with open spacing showing gaps between each cord, they are distributed unevenly around the paddle and have been struck with different forces where impressions vary from faint to deep cord impressions. Fig. 6.17a as well as fig. 6.16b show parallel cord impressions with no reapplications of the paddle forming criss-cross patterns. Fig. 6.17b shows the Paddle Impressed sherd with a form element. The restricted rim shows that the orientation of the paddle was vertical across the body.

The Loose Cord Marked Type is divided into two subtypes based on differences in fabric and firing technology. A thin section was made of ‘Subtype 5i: Loose Cord Marked F4’ which was classified as ‘Fabric 4: Grog and quartz fabric’ (hence the name F4; figs. 6.18a-b) and fired in an oxidising environment. However, more thin sections are needed to prove it is a homogenous group. Because there is so much variation in the paddles used and the amount of coarse inclusions visible, it is unlikely it is a homogeneous fabric and may fall into Fabrics 3, 5 or 6 which have the same fired colour and coarse inclusions. However, for the purpose of this research, all sherds were provisionally put into this subtype. No thin sections were taken of ‘Subtype 5ii: Loose Cord Marked F12’; however, macroscopically this subtype shows variation from ‘Subtype 5i: Loose Cord Marked F4’ in terms of clay, inclusions and fired colour where the sherds were fired in a reducing environment.



Fig. 6.17 Type 5: Bound Paddle, Subtype 5i: Loose Cord Marked F4, Subtype 5ii: Loose Cord Marked F12, Subtype 5iii: Tight Cord Marked F3. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.17a Subtype 5i: Loose Cord Marked F4 (IV-1998-P-15441)

Fig. 6.17b Subtype 5i: Loose Cord Marked F4 (IV-1998-P-15341)

Fig. 6.17c Subtype 5ii: Loose Cord Marked F12 (IV-1998-P-14161)

Fig. 6.17d Subtype 5ii: Loose Cord Marked F12 (IV-1998-P-27400)

Fig. 6.17e Subtype 5iii: Tight Cord Marked F3 (IV-1998-P-20050)

Fig. 6.17f Subtype 5iii: Tight Cord Marked F3 (IV-1998-P-15576)

Subtype 5iii: Tight Cord Marked' differs from the Loose Cord Marked subtypes in that the cord impressions show thin twisted cords which are close together and spaced evenly around the paddle. Vessels in this category are more likely to be paddled irregularly making criss-cross patterns. These subtypes look macroscopically the same, in terms of paddle impression and fired colour. Two thin sections were taken and they are homogenous (Fabric 3: Sandstone and altered igneous fabric) indicating that the clays come from the same source (figs. 6.18c-d).

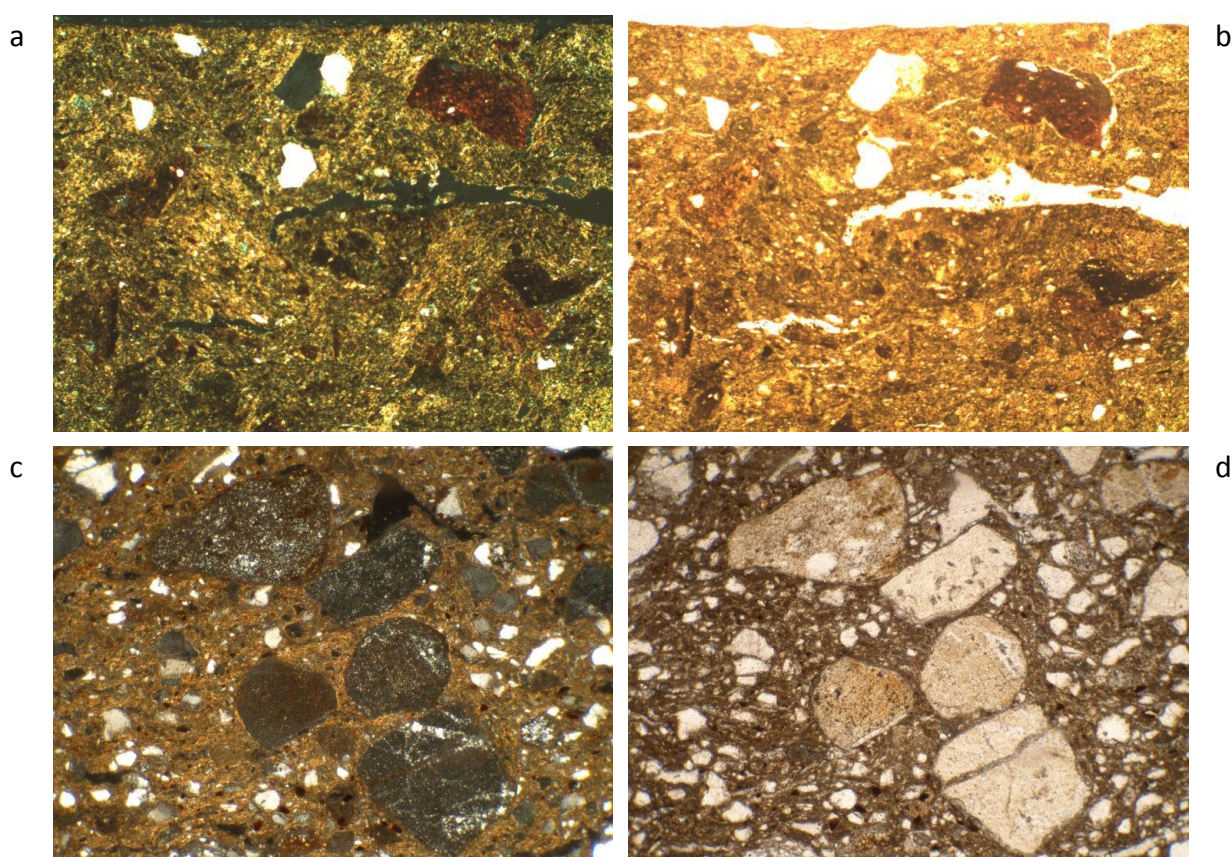


Fig. 6.18 Photomicrographs of Type 5: Bound Paddle, Fabrics 4 and 3 (image: Y. Balbaligo)

Figs. 6.18a-b Subtype 5i: Loose Cord Marked F4, Fabric 4: Grog and quartz fabric (IV-1998-P-20872, sample 019) compared with

Figs. 18c-d Subtype 5iii: Tight Cord Marked F3, Fabric 3: Sandstone and altered igneous fabric (IV-1998-P-20050, sample 005). XP/PPL. Image width = 2.9 mm

In thin section, Subtypes 5i and 5iii both have iron rich clays with alluvial sediment but vary in coarse fraction and technology (figs. 6.18a-b and 6.18c-d). Subtype 5i (Fabric 4) contains sand size grog temper while Subtype 5iii (Fabric 3) contains dominant chert and sandstone and more medium quartz sand. The increased frequency of sandstone and other rock fragments in Fabric 3 show the sample is gravelly and sandy compared to the other.

In terms of form, although paddle impressions are associated with restricted rim vessels, only small flat fragments survived. It is difficult to infer vessel shape from flat sherds without curvature, therefore, the exact forms of the vessel are unknown. Only two sherds in the sample show a paddle impression appearing with another form element; a restricted rim, but whether the vessel was spherical, ellipsoid or ovoid is unknown (figs. 6.17b and 6.17c). The Paddle impressions do not occur on pedestal bowls or any other kind of footed vessel. They do not occur on Red Ware. These vessels are generally small and thin, therefore, unlikely to be used as primary burial jars. Though there are similarities in the forming and decorating of this type, which shows a shared practice in producing this type of vessel, the subtypes identify a level of variation in the corded paddles impressions. It can be argued that the paddle impressions are by-products of the manufacturing as part of the paddle and anvil process or that the vessels were purposefully paddled impressed for its aesthetic value and/or the paddle impressions have a functional purpose for gripping.

Although 'Type 4: Grey Cord Marked' and Subtypes 5i, 5ii and 5iii are all made with a bound paddle and formed in the same fashion, it is unlikely that the clays comes from the same geographic area. Fabrics 3 and Fabric 4 do not share any compositional or technological similarity to Fabric 10. Fabric 10 comes from a completely different clay source not related to Fabrics 1 to 9, and 11 to 12, and had a different tempering technology. Even though Type 4 is cord marked, the technique of binding the paddle is different as can be observed in the impression and the force used to apply the paddle to the vessel is different as can be seen in the deep impressions left on the vessel. Because of the similarities in paddle technique and form, the manufacture process of Type 5: Bound paddle will be discussed in along with Type 6: Carved Paddle.

Summary of correlating attributes for Type 5: Bound Paddle	
Form	Restricted rim
Surface treatment	Surface decoration – cord marked impressions with bound paddle
Manufacture	Hand fashioned, paddle and anvil, oxidising firing atmosphere
Non-correlating attributes	
Fabric	Variation in composition and tempering technology Fabric 3: Sandstone and altered igneous fabric Fabric 4: Grog and quartz fabric Fabric 12: Fine dark brown fabric
Surface treatment	Surface decoration – variations in loose and tight cord marked impressions with bound paddle

6.8.2 Type 6: Carved Paddle

- **Subtype 6i: Carved Paddle F4**
- **Subtype 6ii: Carved Paddle (Rice) F9**
- **Subtype 6iii: Carved Paddle (White) F8**
- **Subtype 6iv: Carved Paddle F11**
- **Subtype 6v: Other**

There are fewer examples of Carved Paddle than Bound Paddle sherds in the studied and sampled assemblage. However, there are more varieties of Carved Paddle than Bound Paddle types based on the different paddles used and fabric. Figs. 6.19a-e shows five subtypes which can be considered the diagnostic examples. Each vessel was decorated with a different paddle. A variety of patterns were carved into the paddle, including regular and irregular squares, rhombuses and other quadrangular shapes. Furthermore, each different pattern appeared on a different fabric, therefore, fabrics may correlate with certain paddles.

‘Subtype 6i: Carved Paddle F4’ is not a homogenous type as the decorations of the paddles vary. Vessels show quadrangular shapes including irregular squares and rhombuses, carved into the same paddle. Therefore, the paddle is not standardised. Impressions are faint and the paddle was not applied with great force, when compared

to subtypes 6ii and 6iii. The exteriors are polished which gives some of the sherds lustre but the interiors are not polished.

Though there are few samples of 'Subtype 6ii: Carved Paddle (Rice) F9', the paddle impressions are homogenous in carved paddle impressions, fabric, fired colour and form. Generally, the paddle impressions are regular and irregular squares, deeply impressed into the clay. This type is distinctive in that the paddle impressions are consistent and that the fabric is different to the other types discussed so far. Thus the paddle decorations, fabric and forming technique all correlate. The fabric is fine dark clay with rice temper (Fabric 9; discussed in section 6.12.3 below). The voids where the rice temper has burnt out can be seen in macroscopic observation on the surfaces.

Like Subtype 6ii, 'Subtype 6iii Carved Paddle (White) F8' is homogenous which makes this subtype different to other types discussed so far in terms of fabric. The carved paddles are regular and irregular squares, and deeply impressed like subtype 6ii. The exterior and interior are beige to pale yellow (or buff) which may be a result of a slip visible in thin section. A dark grey core is very prominent and the exterior and interior margins are thin. The cross section is rugged and platy and coarse angular orange rock fragments are visible on the surfaces of the sherds and in thin section.

'Subtype: 6iv Carved Paddle F11' has the second most samples in the studied assemblage, however, like Subtype 6i, it is not a homogenous type and the paddles used are different to each other. Some sherds have faint irregular quadrangular impressions. Some sherds have the same exterior and interior colour while some show the interior is darker and polished. Each example is different from each other but forms a subtype as they seem to have similar coarse inclusions, background clay and fired colour. They have been classed as Fabric 11 but thin sections are needed to classify them further.



Fig. 6.19 Type 6: Carved Paddle, Subtype 6i: Carved Paddle F4, Subtype 6ii: Carved Paddle (Rice) F9, Subtype 6iii: Carved Paddle (White) F8, Subtype 6iv: Carved Paddle F11, Subtype 6v: Other. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.19a Subtype 6i Carved Paddle F4 (IV-1998-P-42504)

Fig. 6.19b Subtype 6ii Carved Paddle (Rice) F9 (IV-1998-P-14651)

Fig. 6.19c Subtype 6iii Carved Paddle (White) F8 (IV-1998-P-43966)

Fig. 6.19d Subtype 6iv Carved Paddle F11 (IV-1998-P-15341)

Fig. 6.19e Subtype 6vi Other (IV-1998-P- 15411)

‘Subtype 6vi: Other’ (fig. 6.19e) is the only surviving example of a carved paddle sherd of this type. This subtype is unusual because the carved pattern differs from the standard quadrangular impression and instead shows incised ‘v’ shapes forming concentric v patterns. The vessel form is unknown but assumed to be restricted rim like the other carved paddle vessels. The sherd shows slight curvature and the wall thickness is 0.28 cm. The exterior is polished giving it lustre but the interior is not polished and has markings from manufacture. The fabric is similar to Subtype 6i in colour indicating it was fired in a reducing atmosphere. This might place the sherds in Fabric 4. No thin sections were made.

Returning to ‘Type 5: Bound Paddle, Subtype 5v: Other’, IV-1998-P-30000 is comprised of 14 large fragmented sherds (figs. 6.20a-e). It is one of the largest surviving groups of sherds which would comprise one of the largest vessels excavated at Ille. They look like undecorated sherds as the majority of the body sherds are plain and only on closer inspection are paddle marks evident. This subtype is unusual as more than one paddle type was used. This vessel has both square carved paddle impressions and loose cord marked bound paddle impressions on the same vessel (figs. 6.20b to 20e). They are not like other carved or bound sherds where the paddle impressions are purposeful decorations. All impressions are infrequently distributed across the vessel and lightly impressed where they appear to be the by-products of paddling rather than as an obvious decorative feature. These sherds are different from other subtypes in that they are bigger and thicker than other sherds with paddle impressions. The wall thickness is up to 1.5 cm. Although the sherds are mostly flat, some do exhibit curvature, indicating it would have been a very large vessel. The exterior was smooth and the interior had markings consistent with paddle and anvil manufacture. Macroscopic analysis showed coarse to very coarse sand sized sub-angular quartz and sub-angular rock fragments from alluvial sediment. This places the sherds in Fabric 11. No thin sections were made.

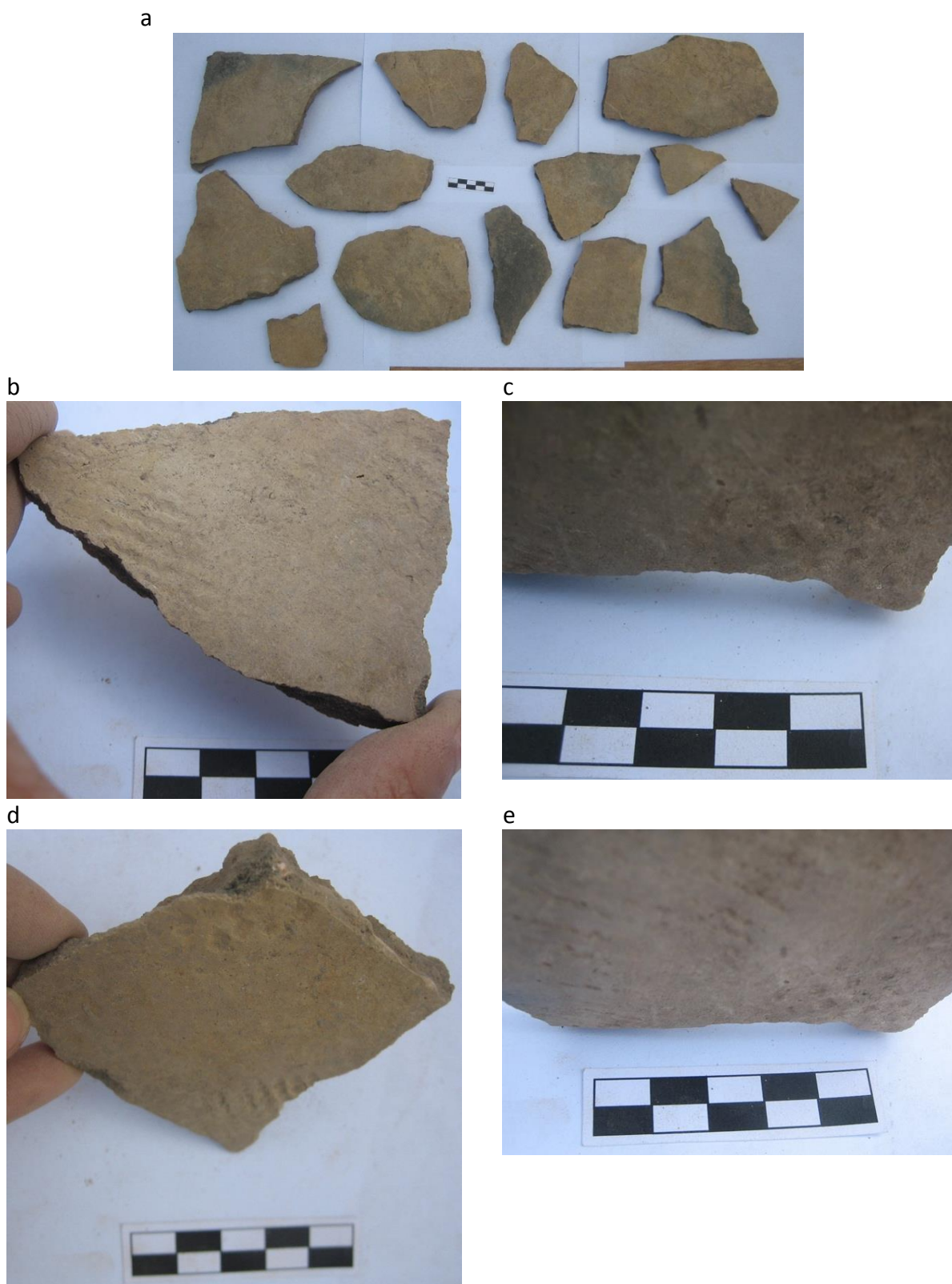
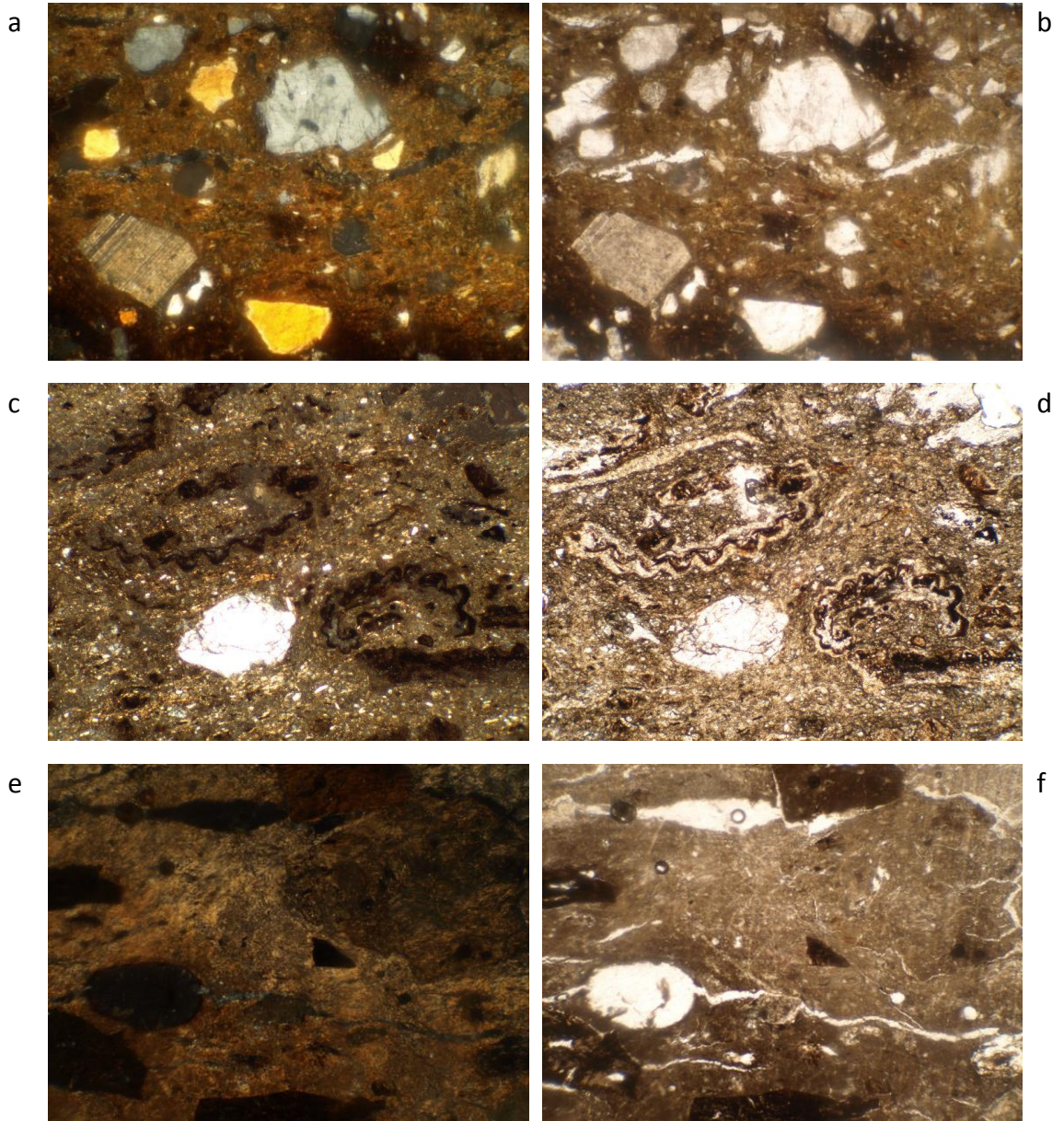


Fig. 6.20 Type 5: Bound Paddle, Subtype 5v: Other. Image scale = 0-5 cm (image: Y. Balbaligo)

Figs. 6.20a-e Large sherds with both bound and carved paddle impressions (IV-1998-P-30000)



Figs. 6.21 Photomicrographs of Type 6: Carved Paddle, Fabrics 4, 9 and 8 (image: Y. Balbaligo)

Figs. 6.21a-b Subtype 6i: Carved Paddle F4, Fabric 4: Grog and quartz fabric. Iron rich clay with dominant coarse sand size grog temper (not displayed), quartz inclusions and rock inclusions (IV-1998-P-42504, sample 006).

Figs. 6.21c-d Subtype 6ii: Carved Paddle (Rice) F9, Fabric 9: Rice temper fabric. Very fine clay with chaff and straw parts of rice plant (present in image chaff) and coarse quartz without other coarse inclusions (IV-1998-P-20636, sample 004)

Figs. 6.21e-f Subtype 6iii: Carved Paddle (White) F8. Very fine clay without coarse inclusions and dominant grog temper (IV-1998-P-21607, sample 013). XP/PPL. Image width = 2.9 mm

The fabric for Type 6 is clearly different in composition and technology (figs. 6.21a-f). Thin sections were taken for Subtypes 6i, 6ii and 6iii. Subtypes 6i is was classified as 'Fabric 4: Grog and quartz fabric', sharing the same fabric as Subtype 5i, Type 7 and Potential Types 13 and 17ii with iron rich clay with dominant coarse sand size grog temper, quartz inclusions and rock inclusions. Subtypes 6ii (Fabric 9: Rice temper fabric) and Subtype 6iii (Fabric 8: Grog temper fabric) differs in clay matrix to Fabric 4. They share the same very fine clay without mineral inclusions, however, are tempered with rice and grog respectively. The significance of rice temper is discussed below. Subtype 6ii is potentially related to 'Potential subtype 18: Buff fabric' as they show the same fabric. This is discussed further below.

In terms of form, paddle impressions occur on restricted rim vessels. However, it is unknown whether the vessel was spherical, ellipsoid or ovoid. The sherds are mostly flat and vessels are thin with the wall thicknesses ranging from 0.5 to 1.11 cm.

Summary of correlating attributes for Type 6: Carved Paddle	
Fabric	Fabrics correlate with certain paddles = subtype <ul style="list-style-type: none"> • Fabric 4/Subtype 6i • Fabric 8/Subtype 6ii • Fabric 9/Subtype 6iii
Form	Restricted rim
Surface treatment	Surface decoration – carved impressions with paddle
Manufacture	Hand fashioned, paddle and anvil
Non-correlating attributes	
Fabric	Variations between subtypes in composition and tempering technology
Surface treatment	Surface decoration – variations in shapes of carved paddle impression
Manufacture	Variations in firing atmospheres

6.9 Introduction to Tool Decorated Types

The following Tool Decorated types were incised and impressed using the tip and side of what Solheim (2002: 7) considered “simple tools”. To be considered a type, the decorations correlate to certain forms and forming techniques. In most cases, fabrics also correlate. As discussed above, because of the visual aesthetics of decorations, large attention has been given to decoration and style in Southeast Asia. However, the focus of this research is to move identification of pottery beyond decoration as a visual marker and instead consider the decorative technique as a part of the technological process and how differences in practices show different learning traditions.

Decorative technique	Type no.	Type	Sub-type no.	Subtype/ form elements	Fabric no.	Fabric name
Tool Decorated	7	Impressed restricted rim	-	-	4	Grog and quartz fabric
	8	Incised Triangles	8i	Incised Triangles F7	7	Mica and quartz fabric
			8ii	Incised Triangles F11	11	Light brown fabric
	9	Shell impressed	-	-	12	Fine dark brown fabric
	10	Incised, impressed, infilled	-	-	12	Fine dark brown fabric
	11	Painted	-	-	11	Light brown fabric
	-	Decorated: No Type	-	-	-	Many

Table 6.9 Types 7 to 11 established at Ille Cave with subtypes and fabrics within the Tool Decorated category.

6.9.1 Type 7: Impressed restricted rim

The correlating features of ‘Type 7: Impressed restricted rim’ are the designs impressed on the lip of the restricted rim vessels, likely to be of the same fabric. All restricted rim vessels share the same forming and manufacturing technique. This decorative technique and style does not occur on any other vessel type e.g. unrestricted rim vessels or pedestal bowls. All vessels are the same range of fired colour indicating that they were all fired under similar oxidising condition. Cores are either brown showing they were fired consistently or grey with thin margins showing

change in temperature or exposure to air. Two thin sections were taken of this type and both have been classified as 'Fabric 4 Grog and quartz fabric'. The fabric was iron rich clay with coarse sand sized chert, rock inclusions and quartz inclusions and contained grog temper (figs. 6.22a-d). Although at this stage, all sherds of this type have been classified as Fabric 4, without further petrography, it is difficult to determine degree of variation in paste preparation. Nevertheless, a further problem is that even with more thin sectioning, it is still difficult to match a type to a fabric as types are too similar and cannot be differentiated macroscopically. Therefore, although the range of fabrics within a type could be known, they could not be attributed macroscopically.

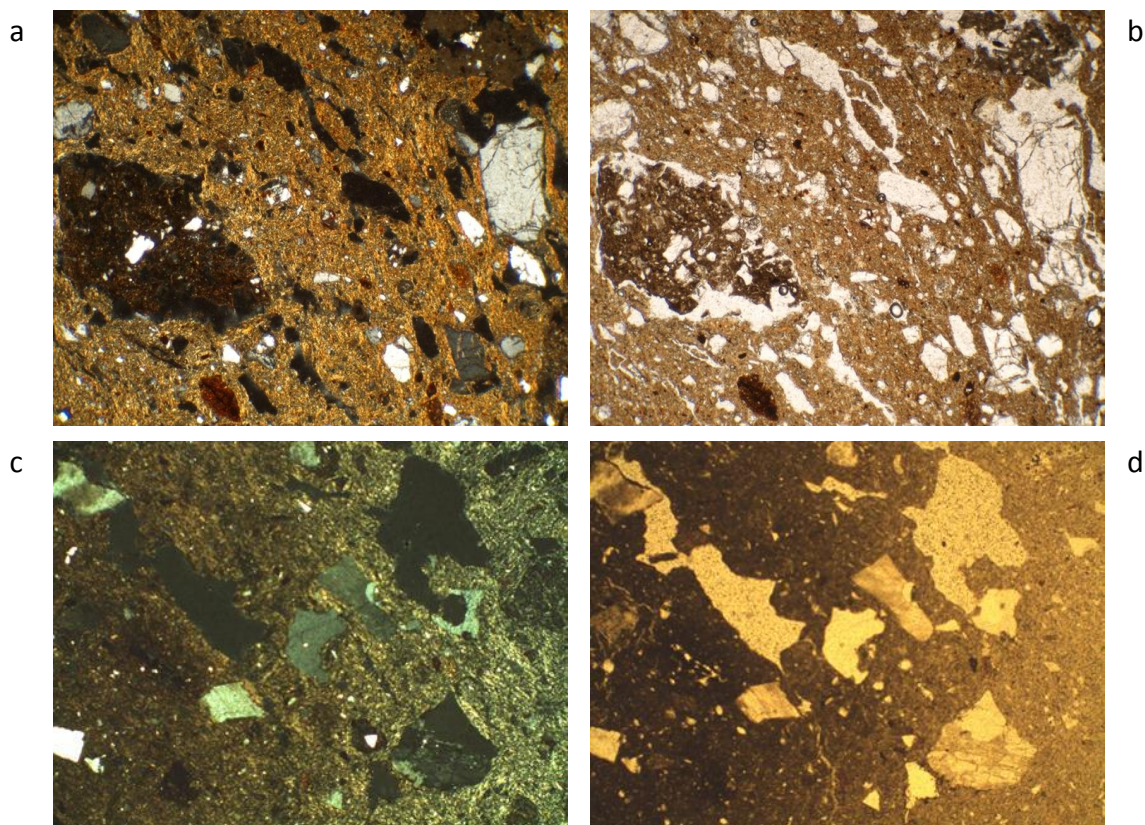


Fig. 6.22 Photomicrographs of Type 7: Impressed restricted rim, Fabric 4 (image: Y. Balbaligo)

Compare similar fabrics of Fig 6.22a-b (IV-1998-P-16286, sample 011) with Fig. 6.22c-d (IV-1998-P-35995, sample 017). Iron rich clay with dominant coarse sand size grog temper, quartz inclusions and rock inclusions. XP/PPL. Image width = 2.9 mm

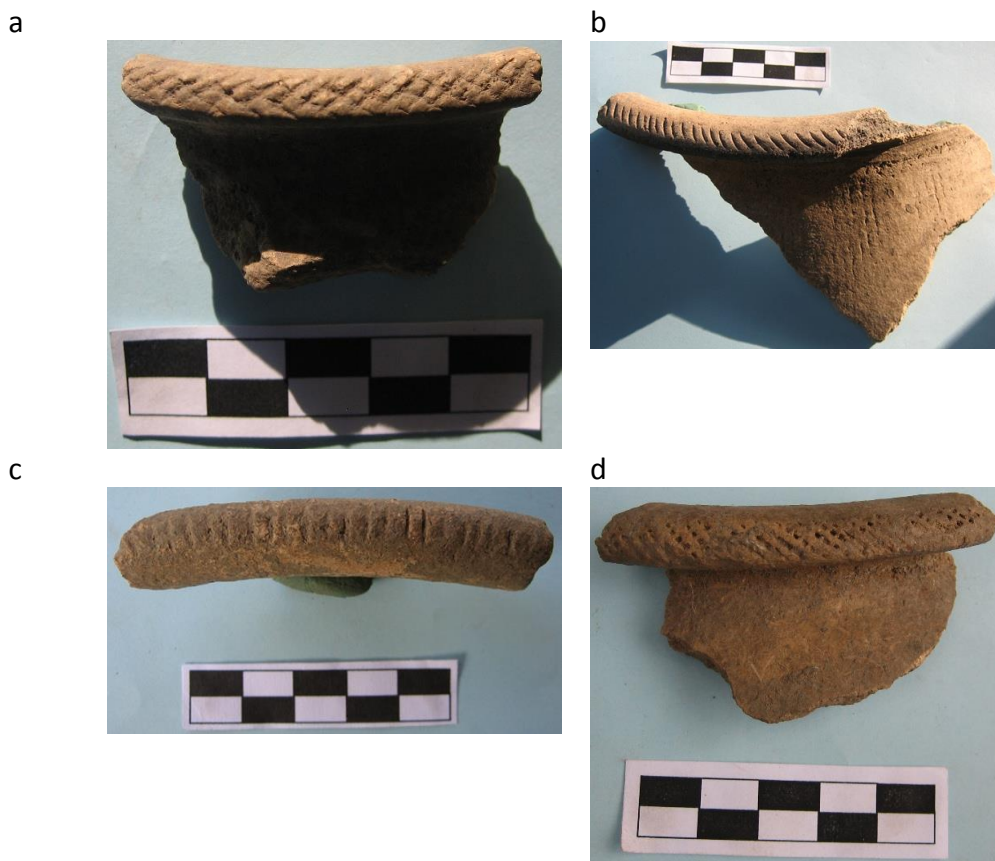


Fig. 6.23 Type 7: Impressed restricted rim. Image scale = 0-5 cm (image: Y. Balbaligo)
 Fig. 6.23a Cross-hatched (IV-1998-P-39908)
 Fig. 6.23b Diagonal fingernail (IV-1998-P-15341)
 Fig. 6.23c Vertical (IV-1998-P-16988)
 Fig. 6.23d Stamped (IV-1998-P-14562)

All restricted forms are mouth rims with a variation of rim types, with directions either outcurving or direct, rim profiles were convergent or parallel and lip profiles were a range of rounded, pointed and flat which creates a large enough surface to impress upon. No full vessels were found. The majority of the sherds break just below the rim, therefore, it is not possible to know whether vessels were globular, ovoid or ellipsoid. One sherd is carinated which means that some of these vessels were carinated and not just rounded. The walls are generally thin. The primary forming technique is made by drawing the pottery. Fig. 6.23b shows bound paddle impressions on the body of a restricted rim vessel, therefore, this is another decorative technique that also occurs with this type and shows that the vessels may have been paddle impressed with a bound paddle. However, the majority of examples were drawn or used a plain paddle as no paddle marks are visible.

The most noticeable variation occurs on the rim lips which show different decorative techniques. Impressions occur in four well-defined styles with distinct methods; cross-hatched, diagonal, vertical and stamped (figs. 6.23a-d). The cross-hatched impressions were made with a thin stick (fig. 6.23a). The diagonal impressions were made with a stick or fingernail (fig. 6.23b). Vertical impressions are also made with a stick (fig. 6.23c). Rims with stamped impressions vary and are not a homogenous group. Stamps were made with a tool, shell or basket which leaves regular square shapes (fig. 6.23d). In terms of surface finish, some sherds show evidence of wiping and polishing. These decorated vessels share the same form as the non-decoration restricted rim vessels. It is not known whether vessels are designated for decoration or not.

Summary of correlating attributes for Type 7: Impressed restricted rim	
Fabric	Fabric 4: Grog and quartz fabric Iron rich clay Alluvial sedimentary inclusions Grog temper
Form	Restricted rim only
Surface treatment	Surface decoration – impressions/stamping on rim lip
Manufacture	Hand fashioned, paddle and anvil

6.9.2 Type 8: Incised Triangles

‘Type 8: Incised Triangles’ is comprised of two fabrics which form subtypes. Both have correlating attributes of distinctive incised lines forming triangular shapes and small impressed triangular shapes which appear on restricted rim vessels with a distinctive pointed lip which is triangular on either side of the rim with pointed terminations (fig. 6.24). This lip is only seen on this ceramic type and this design only occurs on this form (figs. 6.24a and 6.24d). However, the incised triangle designs are not standardised and are incised differently on each vessel in different configurations. Closest to the rim is a single or double incised horizontal line. Below are double incised lines which make intersecting open triangular shapes and the horizontal bands enclose the triangular patterns. Below these, some sherds depending on where broken also have impressed triangle wedge shapes possibly made with the corner of a stick. It is not known if all these kinds of sherds would have these impressions. However, seeing a single

triangular impression or part of the incised triangular motif connects it with the types. Incised triangular shapes are ubiquitous in Southeast Asia.

Few sherds had a slight carination. No full vessels were found to indicate its overall shape. Not all sherds of this type had diagnostic rims but they could be identified as belonging to this type because of its impressed designs. All vessels in this type are hand formed. It is possible that the body of the vessel was paddled with a plain paddle.

This ceramic type is seen in two fabrics: 'Fabric 7: Mica and quartz fabric' where a thin section has been taken and 'Fabric 11: Light brown fabric' where thin sections have not been taken (figs. 6.24b-c and 6.24e-f). Macroscopic differences between the two subtypes show they are clearly made of different fabrics. The samples in 'Subtype 8i: Incised Triangles F7' are very dark brown indicating they were fired in a reducing atmosphere. Coarse quartz inclusions and lustrous orange mica can be seen in hand specimen and by stereomicroscope. In thin section, the quartz, biotite and muscovite mica are the defining features of the fabric and also indicates a mica schist clay source which matches the geology of the area (fig. 6.24g-h).

In contrast, the samples in 'Subtype 8ii: Incised Triangles F11' range from pale brown to greyish brown. Coarse quartz inclusions are visible in hand specimen. It was fired in an oxidising environment. Some samples show a grey core and margins which indicates not all the organic material had burnt out. This subtype has been classified as Fabric 11 because no thin section have been taken, however, it has the same fired colour and alluvial sediment inclusions as Fabrics 3, 4, 5 and 6 and, therefore, may be one of these fabrics.



Fig. 6.24 Type 8: Incised Triangles, rim profiles, Subtypes 8i and 8ii, and photomicrographs. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.24a Profiles with pointed lip

Fig. 6.24b-c Subtype 8i, Fabric 7 (IV-1998-P-32159, IV-1998-P-22062)

Fig. 6.24d Profiles with pointed lip

Fig. 6.24e-f Subtype 8ii, Fabric 11 (IV-1998-P-42100 [compare with fig. 6.67b for difference in learning tradition discernible by fabric] IV-1998-P-41838)

Figs. 6.24g-h Subtype 8i, Fabric 7: Mica and quartz fabric. Iron rich clay with medium sand sized biotite mica and quartz inclusions (IV-1998-P-22062, sample 012). XP/PPL. Image width = 2.9 mm

Summary of correlating attributes for Type 8: Incised Triangles	
Fabric	Fabric 7: Mica and quartz fabric Fabric 11: Light brown fabric
Form	Restricted rim only Pointed lip
Surface treatment	Surface decoration – incised lines forming triangular shapes and small impressed triangles
Manufacture	Hand fashioned

6.9.3 Type 9: Shell impressed

‘Type 9: Shell impressed’ is taken as a homogenous type with correlating fabric, form, decoration and surface finish. There are few samples of this type. Due to the paucity of this type, at this stage no thin sections were taken. However, macroscopically, the fabric has characteristics of ‘Fabric 12: Fine dark brown fabric’. This type is typified by its deep dark brown colour and firing in a reducing atmosphere. The core is grey with very thin margins. Some samples have coarse quartz sand, rock fragments and possibly mica in some samples. The rim form is unusual and there are no similar forms in the overall assemblage. The vessel is a restricted mouth, flat on the exterior with a square flat lip (fig. 6.25a). It is difficult to determine the overall form of the vessel because of the small and flat nature of the surviving sherds.

This ceramic type is the only group of shell impressed vessels at Ille so far. The impression is most similar to the *Anadara* sp. shell also recovered at Ille (Paz and Ronquillo 2004). The bivalve shell creates thin zigzag patterns which are impressed close to each other, within horizontal lines (fig. 6.25b-d). The carinations have thin vertical notches across them (fig. 6.25b and 6.25d) and one example shows small incised lines under the rim (not pictured). The sherds are smoothed, with lustre and are well polished.



Fig. 6.25 Type 9: Shell impressed. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.25a Profile

Fig. 6.25b-d Range of Shell impressed sherds (IV-1998-P-17867, IV-1998-P-21862, IV-1998-P-33910)

Summary of correlating attributes for Type 9: Shell impressed	
Fabric	Fabric 12: Fine dark brown fabric Dark brown fired colour Coarse quartz
Form	Restricted rim Carinated restricted rim vessels Square flat lip
Surface treatment	Surface decoration – shell impressed, notching on carination Surface finish – smooth and polished
Manufacture	Hand fashioned Reducing firing atmosphere

6.9.4 Type 10: Incised, impressed, infilled

'Type 10: Incised, impressed, infilled' is taken as a homogenous type with correlating fabric, form, decoration and surface finish. There are few samples of this type. Due to the paucity of this type, at this stage no thin sections were taken. However, similar to Type 9, macroscopically, the fabric has characteristics of 'Fabric 12: Fine dark brown fabric'. This type is typified by its deep dark brown colour and fired in a reducing atmosphere. The vessel wall is thin and shows it is fired all the way through in a reducing atmosphere. Like Type 9, some samples have coarse quartz sand and rock fragments inclusions. The form is unusual. No rims have been found in association with this vessel as yet and there are no other diagnostic elements apart from a rounded wide angle carination. It is a thin vessel. It is possible the vessel is a thin, shallow bowl.

All sherds show the same decorative motifs with the same pattern of triangles and/or right angles which alternate with incised punctates and blank spaces. Decorations are crudely incised. Some sherds show remnants of white infilling which effervesced when in contact with dilute hydrochloric acid (10% HCl) which indicates it is a form of calcium carbonate (*cf.* Type 1). Decorations only occurred on the upper portion of the carination. It is not possible to know whether the vessel had any more decorations. Some of the sherds had smoothed exteriors showing that they were polished; however, the sherds are worn and most are abraded. It is likely that non-decorated portions of the vessels appear in the sherd count for 'Category 20: Body sherds uncategorised' because they cannot be identified.



Fig. 6.25 Type 10: Incised, impressed, infilled. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.26a-d Range of Incised, impressed, infilled sherds (IV-1998-P-37179, IV-1998-P-39920, IV-1998-P-27948, IV-1998-P-38171)

Summary of correlating attributes for Type 10: Incised, impressed, infilled	
Fabric	Fabric 12: Fine dark brown fabric Dark brown fired colour Coarse quartz
Form	Thin walls Carinated vessel
Surface treatment	Surface decoration – incised lines, punctates, white infilling Surface finish – smooth and polished
Manufacture	Hand fashioned Reducing firing atmosphere

6.9.5 Type 11: Painted

The surface finish of 'Type 11: Painted' shows a different technological practice and process by the addition of paint to the exterior of the sherd. However, it is not a homogenous type with few correlating attributes. This type is unified by the addition of paint to the surface of the sherds and the incised and impressed decorations. No other types in the studied material have painted exteriors. There are few samples of this type. Due to the paucity of this type, at this stage no thin sections were taken. Macroscopically, it was difficult to determine the fabric but may be similar to 'Fabric 1: Grog and chert fabric' as it has the same coarse quartz sand and rock fragments (alluvial sediment). It has the same red fired colour in the interior and profiles shows thin margins and grey cores like the Red Ware. Therefore, it may have been made of the same clay and fired in the same type of atmosphere. However, Type 11 is different in form and decorative style to Types 1 and 2. Despite this, if these sherds are of the same fabric this may provide an expansion of the Red Ware category and the creation of a new type: Red Ware Painted. However, thin sectioning of this sparse type is needed. No form elements, such as rims survive, only carination and wall thickness differ. No complete vessels survive, therefore, it is difficult to know how the fully decorated vessel would look or the full form of the vessel.

Sherds in this type are incised and impressed with a simple tool (figs. 6.27a-d). However, the decorative styles do not share traits with other decorations in the studied assemblage. Painted sherds combined with incised and impressed designs, have been found by Solheim (1964a, 2002) and Fox (1970), with the red colouring assumed to be from hematite. Fox (1970: 87) states that the vessels would have been painted with hematite after firing. Despite this, it is not possible to tell how and when the paint was applied on the Ille sherds. It is possible that the paint has abraded in some samples or that some painted vessels had unpainted portions which cannot be identified as a painted type, therefore, they appears in the sherd count for 'Category 20: Body sherds uncategorised'.

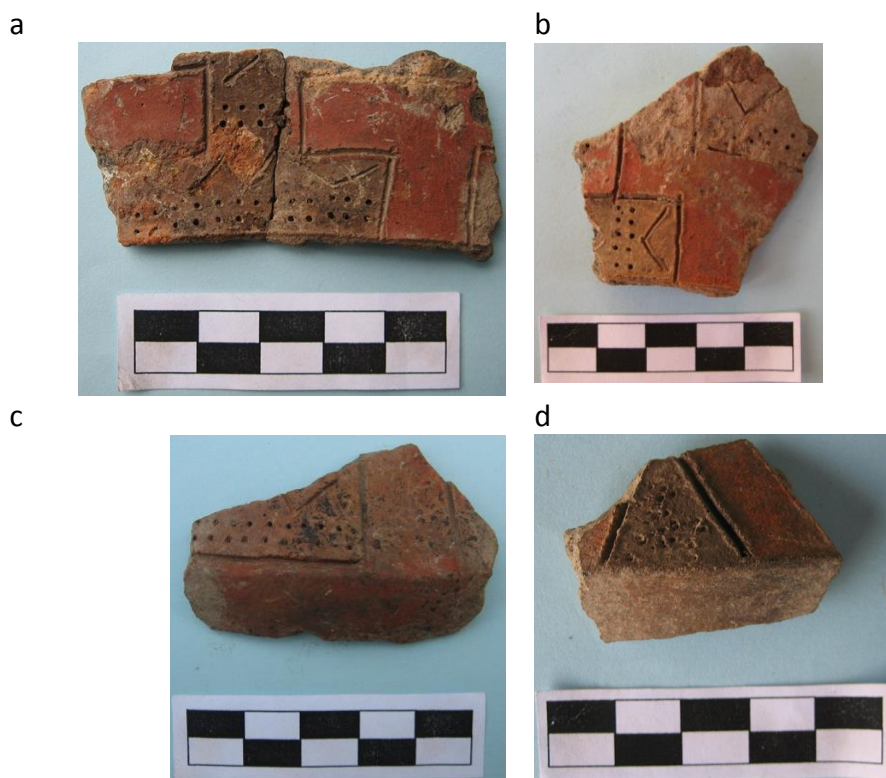


Fig. 6.27 Type 11: Painted. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.27 Range of painted sherds (IV-1998-P-21917a+21917, IV-1998-P-17890, IV-1998-P-18716, IV-1998-P-43003)

Summary of correlating attributes for Type 11: Painted	
Fabric	Fired red colour Iron rich clay Alluvial sedimentary inclusions
Surface treatment	Surface decoration – incised lines, punctates, paint (red)
Manufacture	Hand fashioned Reducing firing atmosphere

6.10 Decorated: No Types

The following ceramics do not fit into a type because they do not have correlating attributes. These ceramics have the potential to form types. However, at this stage there is not enough information to securely group them into types. Some of the sherds are 'one-offs' or 'unique' and some are classed as 'special finds' which are complete anomalies without parallel. It is unlikely that these samples are the only artefacts of this kind, merely that they represent a small proportion of the overall assemblage. This

section of 'no types' illustrates further the range of diversity in assemblage through decoration, form and fabric.

The following two rim sherds (figs. 6.28 and 6.29) are the largest examples of surviving rim sherds in the overall assemblage. They are both impressed with circular punctates within incised triangular lines on the flat lip of the rim. Common to these vessels is the recurring triangular motifs which are found in many Southeast Asian ceramic assemblages. The occurrence of triangles and other decorative techniques are discussed in Chapter 7. With fig. 6.28, the radius of the rim orifice was 15 cm which represented 13% of the rim. The flat lip measured 1.81 cm at its widest and the body under the rim measured 0.94 cm. Because of its size the sherds could be the rims of burial jars. However, it is difficult to know what type of form this vessel would take and its function.

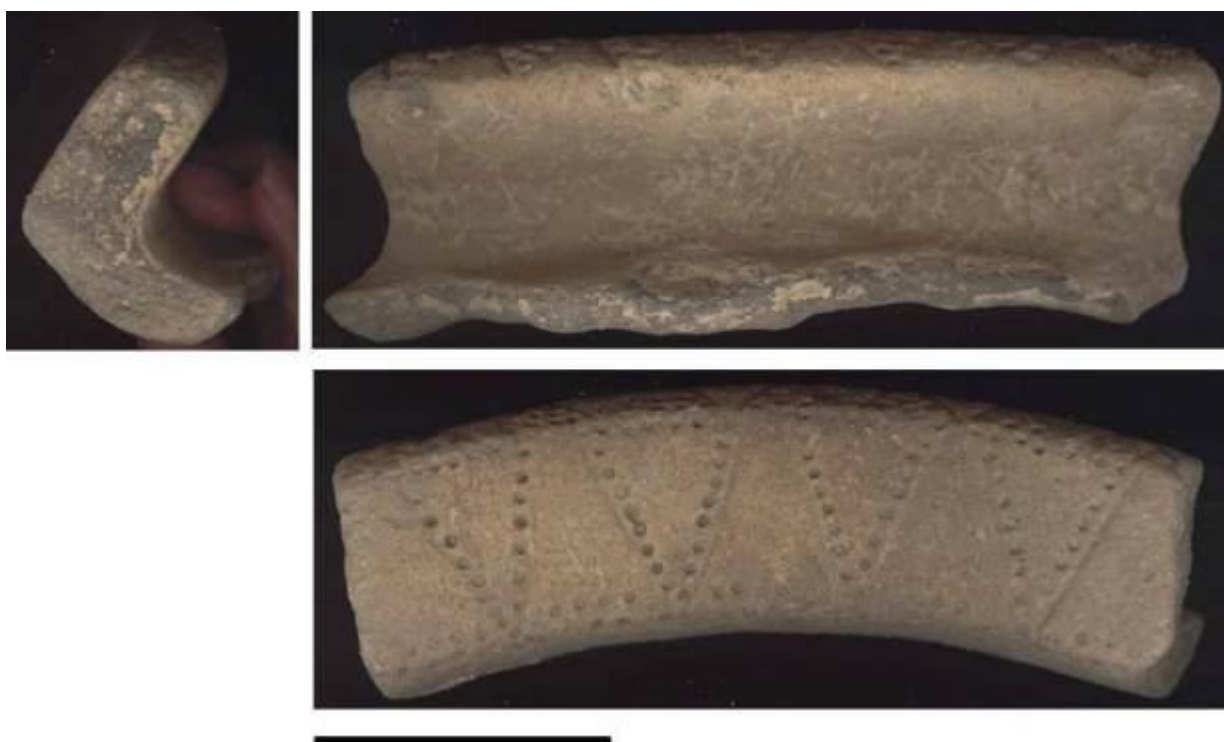


Fig. 6.28 Decorated: No Type, large incised and impressed rim, profile, exterior and top view. Image scale = 0-5 cm (IV-1998-P-17655; image: Y. Balbaligo)



Fig. 6.29 Decorated: No Type, large incised and impressed rim, profile, exterior and top view. Image scale = 0-5 cm (IV-1998-P-34961; image: Y. Balbaligo)

The following sherds have similarities to vessels excavated Kalanay Cave, Masbate, central Philippines by Solheim between 1951 and 1953 (Solheim 1964a, 2002: 35) and Sasak Rockshelter, southern Palawan by Fox (1970: 170) in the mid-1960s. The similarities are discussed in Chapter 7. Figs. 6.30a-d shows sherds with similar decorative motifs with pairs of incised diagonal lines, two horizontal bands, two punctates on top of each other and sloping 's'. Fig. 6.30a shows a restricted rim vessel. It is likely that the other samples (figs. 6.30b-d) were also restricted rim jars due to the positioning of the decoration on the sherd and the rough interiors which suggest they were not unrestricted bowls. All sherds share the same macroscopic attributes of the same fired colour very dark grey and most likely to be 'Fabric 12: Fine dark brown fabric' which links these sherds to others in the sample with a similar fabric. The similarities with the Kalanay Cave and Sasak Rockshelter ceramics and the implications are discussed in Chapter 7.



Fig. 6.30 Decorated: No Type, Kalanay/Sasak decorations. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.30a-d Range of sherds that have similarities to vessels excavated Kalanay Cave (IV-1998-P-24546, IV-1998-P-21233, IV-1998-P-19300, IV-1998-P-13031)

Fig. 6.31 shows a sherd which is completely unique in the 2004-2008 Ille assemblage. It is a corner fragment of a square lid with incised vertical and triangular lines and impressed punctates on one corner and incised lines forming a geometric pattern on the other corner. The top corner has a raised protruding line that leads to centre of the lid and then breaks. The lid is crudely made, irregular with bumps in some parts. It is not known how it would fit onto a vessel and no vessels with square mouths have been found in the overall assemblage. The fired colour is similar to Type 7 or Potential type 14/15. It is possible it could be made out of 'Fabric 3: Sandstone and altered igneous fabric', 'Fabric 4: Grog and quartz fabric' or 'Fabric 5: Chert and quartzite fabric' because of their similarities in fabric. Though square ceramic lids have been

excavated at the Tabon Caves which contained painted teeth (Fox 1970: 95), to date, none have been found at Ille or at other cave sites surveyed in the Dewil Valley or the wider El Nido area.



Fig. 6.31 Decorated: No Type, Square lid. Corner fragment of incised and impressed square lid. Image scale = 0-5 cm (IV-1998-P-19775; image: Y. Balbaligo)

6.11 Introduction to Undecorated Forms – Potential Types

The following categories of sherds are undecorated and grouped according to form elements. These groups have the potential to form types. However, at this stage there is not enough information to securely group them into types and there is possible overlap with other categories. The following section comprises all the forms that have not yet been mentioned.

Undecorated	#	Potential Type	Sub-type no.	Subtype/form elements	Fabric no.	Fabric name
Forms	12	Pedestal bowl	12i	Pedestal bowl F7	7	Mica and quartz
			12ii	Pedestal bowl	-	Many
			12iii	Other	-	Unknown
	13	Large brown rim	-	-	4	Grog and quartz
	14	Restricted rim	-	-	6	Chert and volcanic rock Many
	15	Unrestricted rim	-	-	-	Many
	16	Flat triangular rim	-	-	12	Fine dark brown

Table 6.10 Potential Types 12 to 16 established at Ille Cave with subtypes and fabrics within the undecorated forms category.

6.11.1 Potential Type 12: Pedestal bowl

This diverse group shows undecorated pedestal bowls with variations in form, forming techniques and fabric. This category has been divided into three potential subtypes divided by fabric. ‘Potential Subtype 12i’ was thin sectioned and showed quartz, biotite and muscovite mica, identifying it as ‘Fabric 7: Mica and quartz fabric’ and fired in a reducing atmosphere. This is the same fabric as ‘Subtype 8i: Incised Triangles F7’. Macroscopic analysis shows ‘Potential Subtype 12ii’ has coarse quartz and rock inclusions (alluvial sediment) as seen in other types and fired in an oxidising atmosphere with core margin. There may be a range of fabrics, however, without more thin section analysis it is not possible to know how many may exist. In terms of form, the sherds vary in size (compare figs. 28a-d to figs. 29a-d). The foot rings of 12i and 12ii have a rounded rim and lip (compare to ‘Type 1: Red-Slipped Decorated, Subtype 1i’) but are distinctly different to pedestal bowls of ‘Type 1: Red-Slipped Decorated’. It is likely the upper bowl and lower foot rings are made separately and then joined together. Some bowl portions show deep scoring marks where the bowl attaches to the foot rim. After the bowl and foot ring are attached, the vessel is shaped and smoothed to conceal the joins.

‘Potential Type 12iii’ had an unusual fabric and form and as yet, no other similar types have been excavated and is, therefore, an anomaly. It is unusually large with thick walls. The sherd is in poor condition, highly porous, abraded showing voids and exposing coarse quartz and rounded granule sized rock fragments. The exterior has a thick red coat which may be paint. It does not share the same rim forms as the other pedestal bowls.

Summary of correlating attributes for Potential Subtype 12: Pedestal bowl	
Form	Pedestal bowl only
Surface treatment	Surface decoration – none
Manufacture	Handmade
Non-correlating attributes	
Fabric	Variation in composition and tempering technology Fabric 7: Mica and quartz fabric (reducing) Other fabric (oxidising)



Fig. 6.32 Potential Type 12: Pedestal bowl rim profiles, exteriors, image scale = 0-5 cm and photomicrographs (image: Y. Balbaligo)

Fig. 6.32a Pedestal bowl foot rim profile (IV-1998-P-43370)

Fig. 6.32b Pedestal bowl foot rim exterior (IV-1998-P-43370)

Fig. 6.32c Pedestal bowl foot rim profile (IV-1998-P-43272)

Fig. 6.32d Pedestal bowl foot rim exterior (IV-1998-P-43272 compare with fig. 6.50c-d showing different forms of pedestal foot ring). Also given as an example in fig. 1.2d

Fig. 6.32e-f Iron rich clay with medium sand sized biotite mica and quartz inclusions. Biotite mica contiguous to coarse grains of metamorphose quartz indicating it may be from a metamorphic schist unit (IV-1998-P-43370, sample 010). XP/PPL. Image width = 2.9 mm.



Fig. 6.33 Range of Potential Type 12: Pedestal bowl foot rings. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.33a-b Subtype 12i, profile and exterior of pedestal bowl (IV-1998-P-18942)

Fig. 6.33c-d Subtype 12ii, profile and exterior of pedestal bowl (IV-1998-P-41836)

Fig. 6.33e-f Subtype 12iii, profile and exterior of pedestal bowl (IV-1998-P-21912)

6.11.2 Potential Type 13: Large brown rim

There are few examples in this potential type. These undecorated sherds could have been included in 'Potential type 14: Restricted rim'. However, this homogenous group has clear correlating attributes of fabric and form, especially size. All vessels are the same fired colour range of light brownish yellow indicating that they were all fired under similar oxidising condition. The cores are the same colour as the surfaces showing they were fired consistently. Macroscopically, the sherds show coarse sand sized alluvial sediments. In thin section, it can be classified as 'Fabric 4: Grog and quartz fabric' with dominant coarse quartz and the addition of grog temper. The grog temper has similar composition and arrangement as the parent fabric showing it is made from same clay material (figs. 6.34a-d). This type has the same fabric as 'Type 5, subtype 5i: Loose Cord Marked F4', 'Type 6, Subtype 6i: Carved Paddle F4', 'Type 7: Impressed restricted rim' and 'Potential Subtype 17ii: Brown fabric'. While the raw materials and the microscopic technology are the same, the macroscopic technology is different and there are different technological processes in the primary and secondary treatments and the addition of surface decoration to these types.

Though this potential type is a restricted rim, it differs from the other 'Potential Type 14: Restricted rims' in its size. It is larger and thicker than Potential Type 14. All restricted forms are mouth rims which are outcurving with convergent rim profiles. The majority of the sherds break below the rim, therefore, it is not possible to know whether vessels were globular, ovoid or ellipsoid. Rims are made in the same way by hand. Fig. 6.35a-g shows the slight variations in rim forms. Because the vessel is so large, it is possibly slab built rather than being formed from one piece of clay. It is possible a plain paddle may have been used to work the body. However, at this stage, undecorated body sherds have not been matched to these rims to identify this.

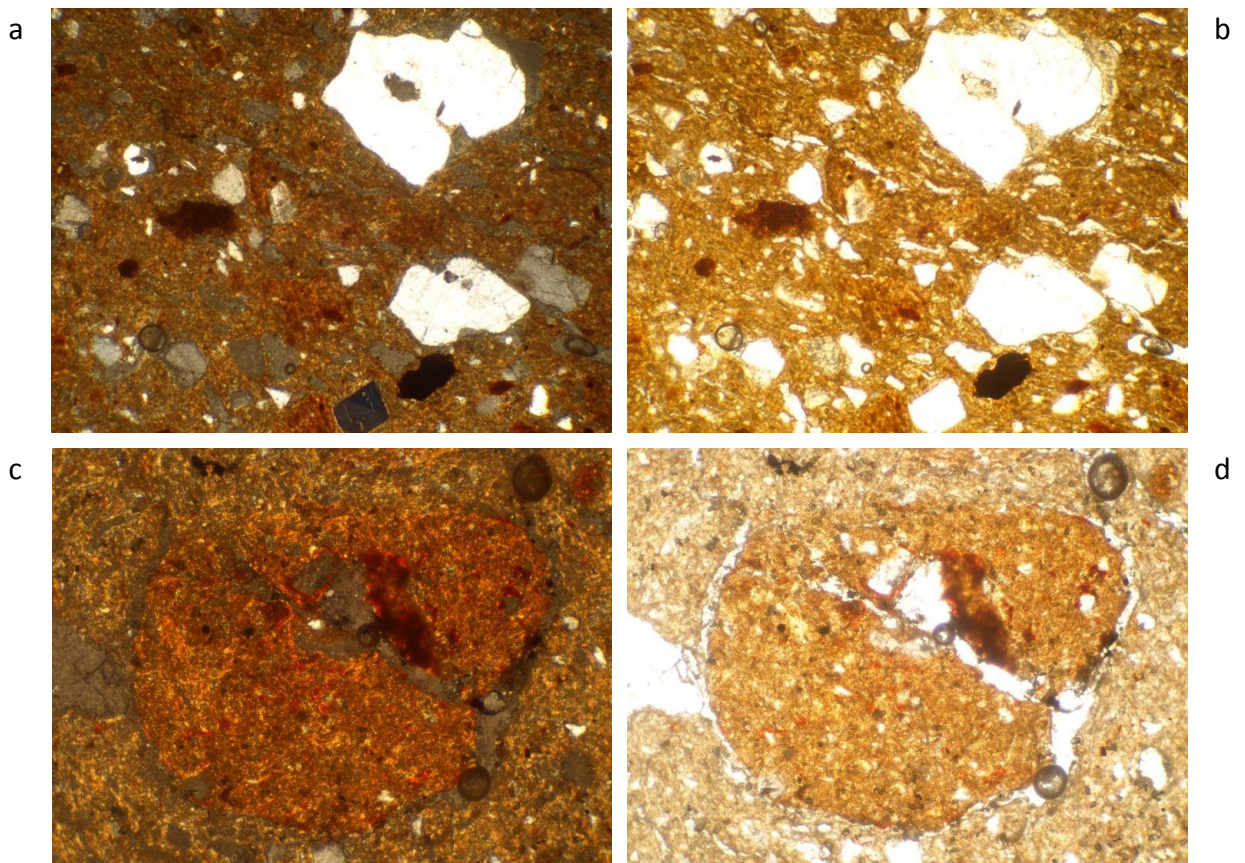


Fig. 6.34 Photomicrographs of Potential Type 13: Large brown rim, Fabric 4 (image: Y. Balbaligo)

Figs. 6.34a-b Iron rich clay with coarse quartz, rock inclusions and grog temper.

Figs. 6.34c-d Shows grog temper with void within grog temper (IV-1998-P-14400, sample 009). XP/PPL. Image width 6.34a-b = 2.9 mm, 6.34c-d = 1.45 mm

Summary of correlating attributes for Potential Type 13: Large brown rim	
Fabric	Fabric 4: Grog and quartz fabric Iron rich clay Alluvial sedimentary inclusions Grog temper
Form	Large restricted rim only
Surface treatment	Surface decoration – none
Manufacture	Handmade, possibly slab built, possible plain paddle and anvil Oxidising firing atmosphere No core margins (firing temperature regular)

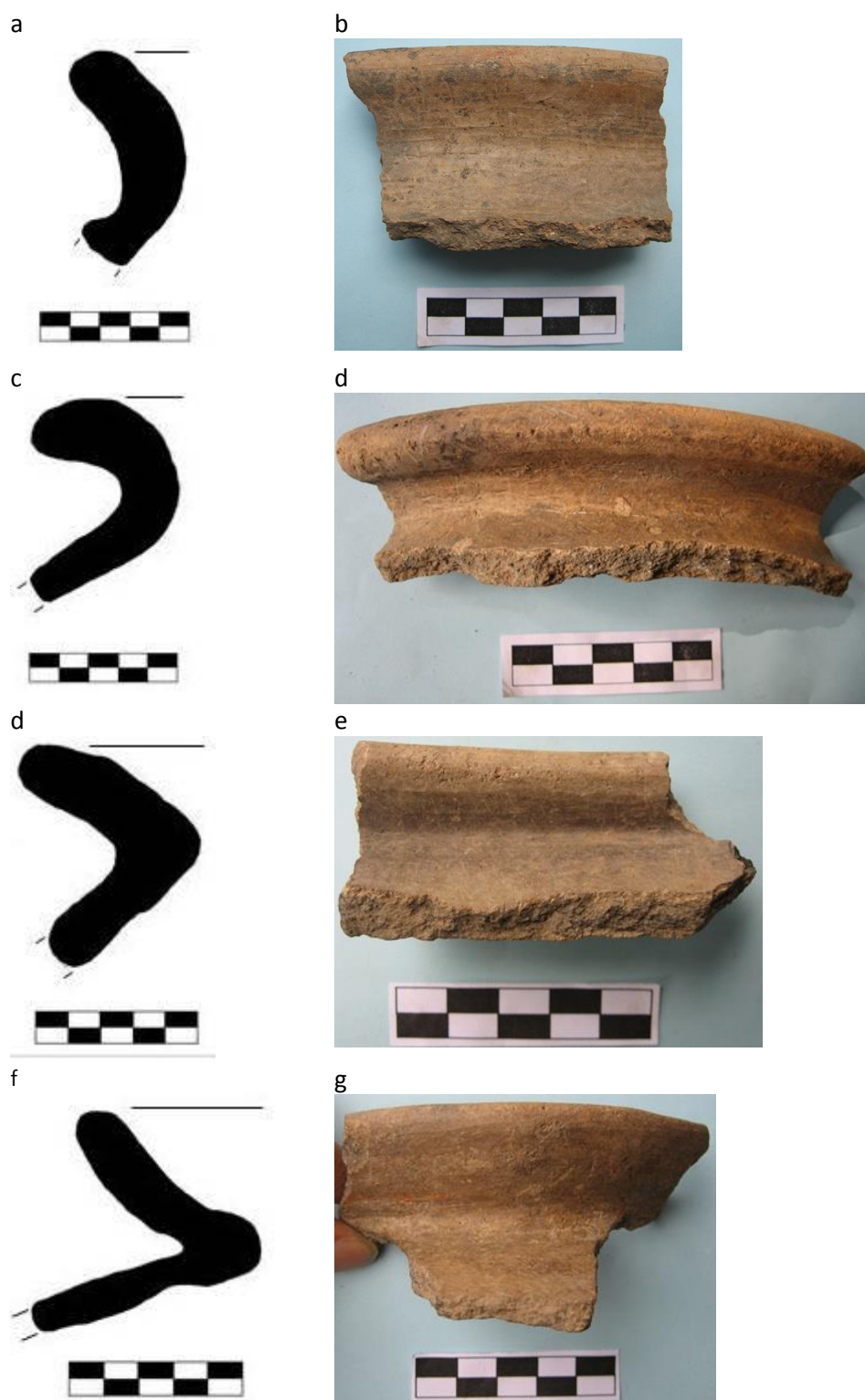


Fig. 6.35 Range of Potential Type 13: Large brown rim. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.35a-g Profiles and exteriors (IV-1998-P-14400, IV-1998-P-24127, IV-1998-P-15168, IV-1998-P-20971)

6.11.3 Potential Type 14: Restricted rim

'Potential Type 14: Restricted rim' is a diverse category. The restricted rim sherds have a range of rim variations and are many different sizes. It is clear from macroscopic analysis that there are many fabrics. Sherds with alluvial sediment were common and grog temper was evident in some sherds. Different colours of the sherds indicate different firing atmospheres. Two thin sections were taken which show different mineral and rock composition and frequency to other thin sectioned sherds. Minerals and rocks appear in an abundance that are not seen in other fabrics which suggest they come from a different clay source containing more volcanic rock. This has been categorised 'Fabric 6: Chert and volcanic rock fabric' (figs. 6.36a-d). Technologically, these samples contain grog temper similar to other samples. However, this technique is ubiquitous and does not imply a shared practice. The samples were reasonably low-fired in an oxidising atmosphere. Sherds in this subtype are also similar to 'Type 7: Impressed restricted rim' which are 'Fabric 4 Grog and quartz fabric', therefore, it is likely that sherds in this potential type will also be made from Fabric 4.

This category has examples of complete and almost complete vessels which give an indication of vessel shapes. Figs. 6.37a-b shows the only intact vessel excavated at Ille. It is a small sphere shaped 'jar' which can be defined as a closed vessel with a width of approximately the same as the height and where the diameter of the opening is usually less than the width or the height (*cf.* Shopland 2005). It has a height 7 cm, the exterior rim diameter is 7.5 cm, the exterior rim circumference is 17.2 cm with a 31.5 cm circumference around widest part. There is sooting from manufacture or use. It was found associated with shell and shell fragments, other earthenware sherds, rock fragment, a human rib, human skull and bone fragments and contained small pebbles, small earthenware sherds, seeds, shell fragments and small animal bones. Wet flotation showed small animal bones, shell fragments, a small hematite nodule and fragments of shell. It is unknown whether all these materials were placed together intentionally or only became associated through post-depositional disturbance. Other almost complete samples show spherical and ovoid forms (figs. 6.37c-e). Overall, there is a wide variation of rim types, with directions either outcurving or direct, rim profiles

were convergent or parallel and lip profiles ranged from rounded to pointed. Some sherds show corner points which mean that some of these vessels were carinated and not just rounded. The primary forming technique is made by drawing the pottery.

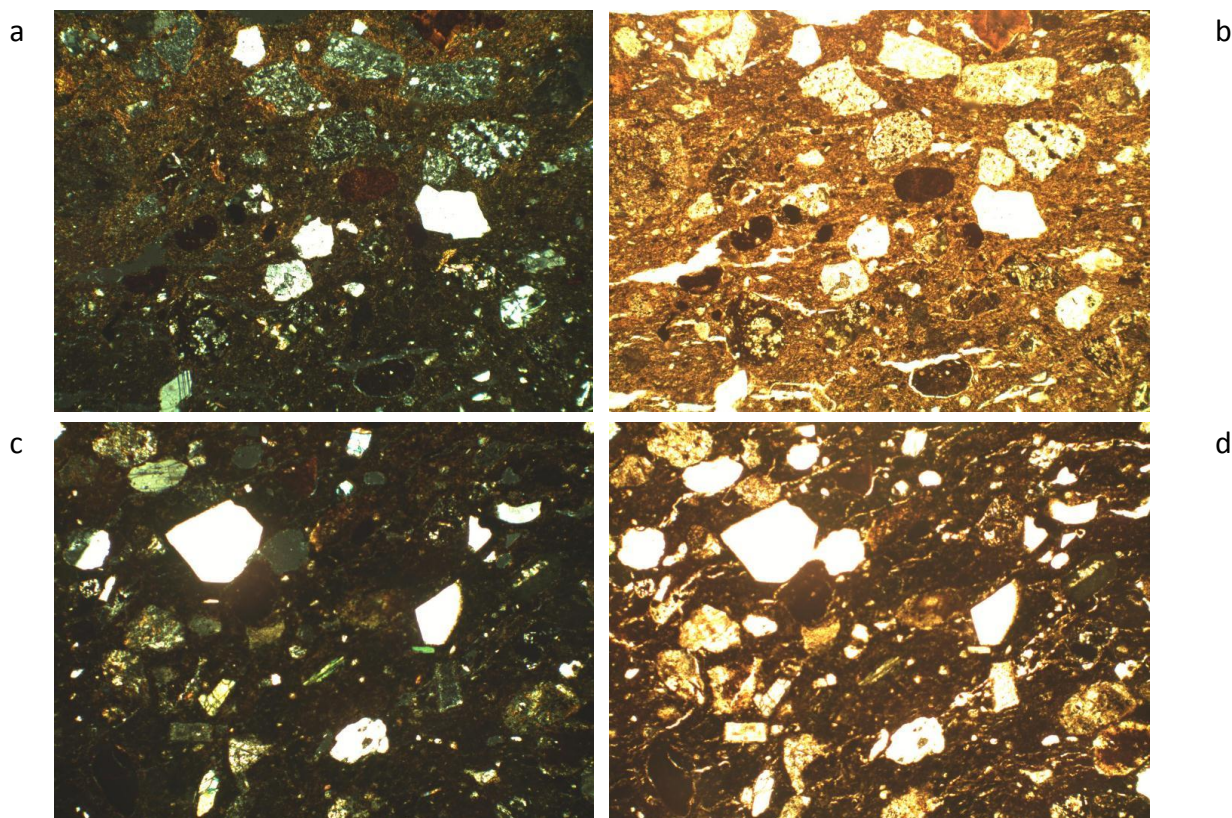


Fig. 6.36 Photomicrographs of Potential Type 14: Restricted rim, Fabric 6 (image: Y. Balbaligo)

Compare figs. 6.36a-b (IV-1998-P-888001, sample 020) and figs. 6.36c-d (IV-1998-P-888002, sample 021) showing similar fabrics with dominant coarse sand sized quartz inclusions, rock fragments and grog. XP/PPL. Image width = 2.9 mm



Fig. 6.37 Range of Potential Type 14: Restricted rim. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.37a-b Jarlet, only intact vessel found at Ille (IV-1998-P-35348)

Fig. 6.37c-f Half a third of a vessel with rim showing form and height (IV-1998-23096)

Fig. 6.37e Complete body of vessel without a rim, giving a good idea of what a vessel form would have looked like (IV-1998-41681)

Summary of correlating attributes for Potential Type 14: Restricted rim	
Form	Restricted rim only
Surface treatment	Surface decoration – none
Manufacture	Handmade, drawing clay, possible plain paddle and anvil

6.11.4 Potential type 15: Unrestricted rim

Similar to ‘Potential Type 14: Restricted rim’, the sherds in Potential Type 15 are found with a range of rim variations and many different sizes. Macroscopic analysis shows that there may be many fabrics. Sherds with alluvial sediment were common and grog temper was evident in some sherds. However, no sherds of this category were thin sectioned. Due to the small size of surviving fragments, it is not possible to know which unrestricted rims are from stand-alone bowls or the upper bowls of a pedestal bowl. Due to the way that pedestal bowls are attached to the foot ring, they will always break at the join and no bases of bowls have been recovered.

Forms vary from rounded rim lips, rounded bodies and bases (*úbet*), to carinated bodies with a corner point (figs. 6.38a-d). All bowls are ellipsoid and shallow, however, the carinated vessel may be slightly deeper. The vessels were made by hand by drawing the clay. The vessels were polished and they are smooth with a lustre.

Summary of correlating attributes for Potential type 15: Unrestricted rim	
Form	Unrestricted rim only
Surface treatment	Surface decoration – none
Manufacture	Handmade, drawing clay



Fig. 6.38 Potential type 15: Unrestricted rim. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.38a-d Profiles and exteriors (IV-1998-P-23093, IV-1998-P-15168)

6.11.5 Potential Type 16: Flat triangular lip

There are only few examples in this potential type. These non-decorated sherds could have been included in 'Potential Type 15: Unrestricted rim'; however, this homogenous group has clear correlating attributes of fabric and form, especially the distinctive lip. All vessels are the same fired colour in the range of dark brown indicating that they were all fired under similar reducing condition. The cores are the same colour as the surfaces showing they were fired consistently. Macroscopically, sherds mostly show very fine clay matrix with no inclusions, classified as 'Fabric 12: Fine dark brown fabric'. No thin sections were made.

Similar to 'Potential type 15: Unrestricted rim', it is not possible to know whether these vessels were stand-alone bowls or the upper bowls of a pedestal bowl. The lip is distinct with a flat surface with a divergent triangular rim that becomes thinner where it meets the body of the vessel. There were slight differences in the forming of the rim,

however, they are clearly similar (see fig. 6.39). The walls are generally thin. These vessels were smooth and highly polished with lustre, more than the sherds in Potential type 15.

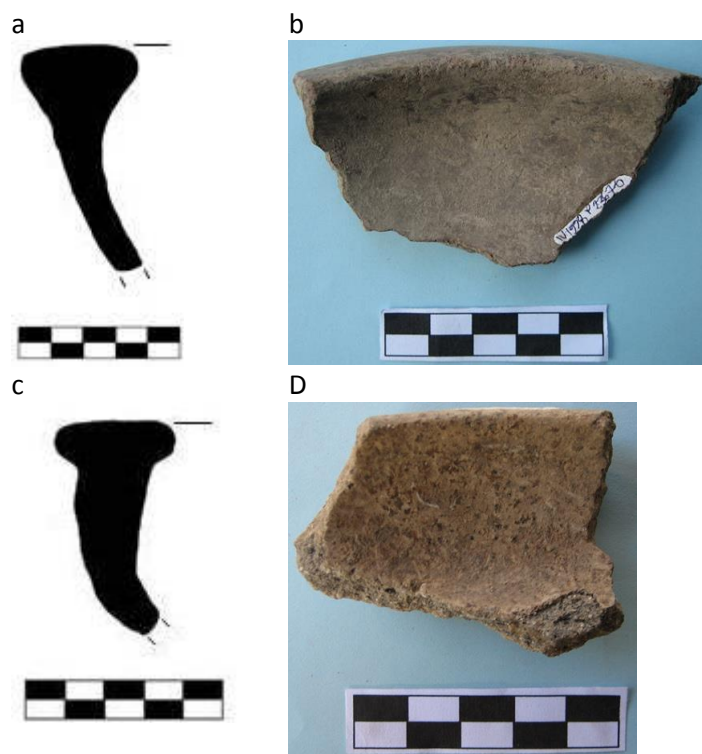


Fig. 6.39 Range of Potential Type 16: Flat triangular lip. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.39a-d Profiles and exteriors (IV-1998-P-23670, IV-1998-P-27343)

Summary of correlating attributes for Potential Type 16: Flat triangular lip	
Fabric	Fabric 12: Fine dark brown fabric
Form	Unrestricted rim only Flat triangular rim
Surface treatment	Surface decoration – none Surface finish – highly polished
Manufacture	Handmade, drawing clay

6.12 Introduction to Undecorated Fabrics – Potential Types

The following three potential types are undecorated body sherds with no other diagnostic attributes such as form elements or decoration. It is unknown what form the vessels took and whether they are the undecorated fragment of a decorated vessel. These three potential types are recurrent or distinctive in the studied assemblage. Thin sections were taken to assess whether they could be categorised into types that have already been established in the sample and to see what further microscopic variation exists. These sherds have the potential to be attributed to types but need more correlating attributes. However, at this stage there is not enough information to securely group them into types and there is possible overlap with other categories. It is likely that more of these potential types will be found in Category 20: Body sherds uncategorised and can also be matched to other types.

Undecorated	#	Potential type	Sub-type no.	Subtype/ form elements	Fabric no.	Fabric name
Fabrics	17	Brown fabric	17i	Brown fabric F5	5	Chert and quartzite fabric
			17ii	Brown fabric F4	4	Grog and quartz fabric
	18	Buff fabric	-	-	8	Grog temper fabric
	19	Rice temper fabric	-	-	9	Rice temper fabric
	20	Body sherds uncategorised	-	-	-	Many

Table 6.11 Potential Types 17 to 20 established at Ille Cave with subtypes and fabrics within the undecorated fabrics category.

6.12.1 Potential Type 17: Brown fabric

A large number of types are a fired brown colour. Therefore, it is not unusual that there were many undecorated fired brown sherds without diagnostic elements. Thin sections were taken of two flat undecorated brown sherds with the same wall thickness but that were macroscopically different (fig. 6.40). Fig. 6.40a (Potential subtype 17i: Brown fabric F5; sample 008) shows abundant inclusions of alluvial sediment on the surfaces while fig. 6.40b (Potential subtype 17ii: Brown fabric F4; sample 018) did not. In thin section, two fabrics were evident and clearly from

different clay sources. While both samples had fine iron rich paste, sample 008 had dominant inclusions of medium and coarse sand sized chert, quartz and quartzite inclusions (alluvial sediment). There was an abundance of radiolarian chert and distinctive quartzite and thus classified 'Fabric 5: Chert and quartzite fabric'. Sample 018 showed different paste preparation as the sample contained grog temper which has a similar composition and arrangement as the parent fabric and was, therefore, made from the same clay. The sample showed sandstone and granite but very rare chert and no quartzite and was thus classified 'Fabric 4: Grog and quartz'.

'Potential subtype 17i: Brown fabric F5' did not match other sherds thin sectioned, however, 'Potential subtype 17ii: Brown fabric F4' had the same fabric as 'Subtype 5i: Loose Cord Marked F4', 'Subtype 6i: Carved Paddle F4', 'Type 7: Impressed restricted rim' and 'Potential Type 13: Large brown rim'. Therefore, it is possible that 'Potential subtype 17i' belongs to one of these ceramic types. More thin sectioning is needed of these undecorated brown sherds to define the range and identify further distinct groups.

Summary of correlating attributes for Potential Type 17: Brown fabric	
Fabric	Fabric 4: Grog and quartz fabric Fabric 5: Chert and quartzite fabric
Surface treatment	Surface decoration – none

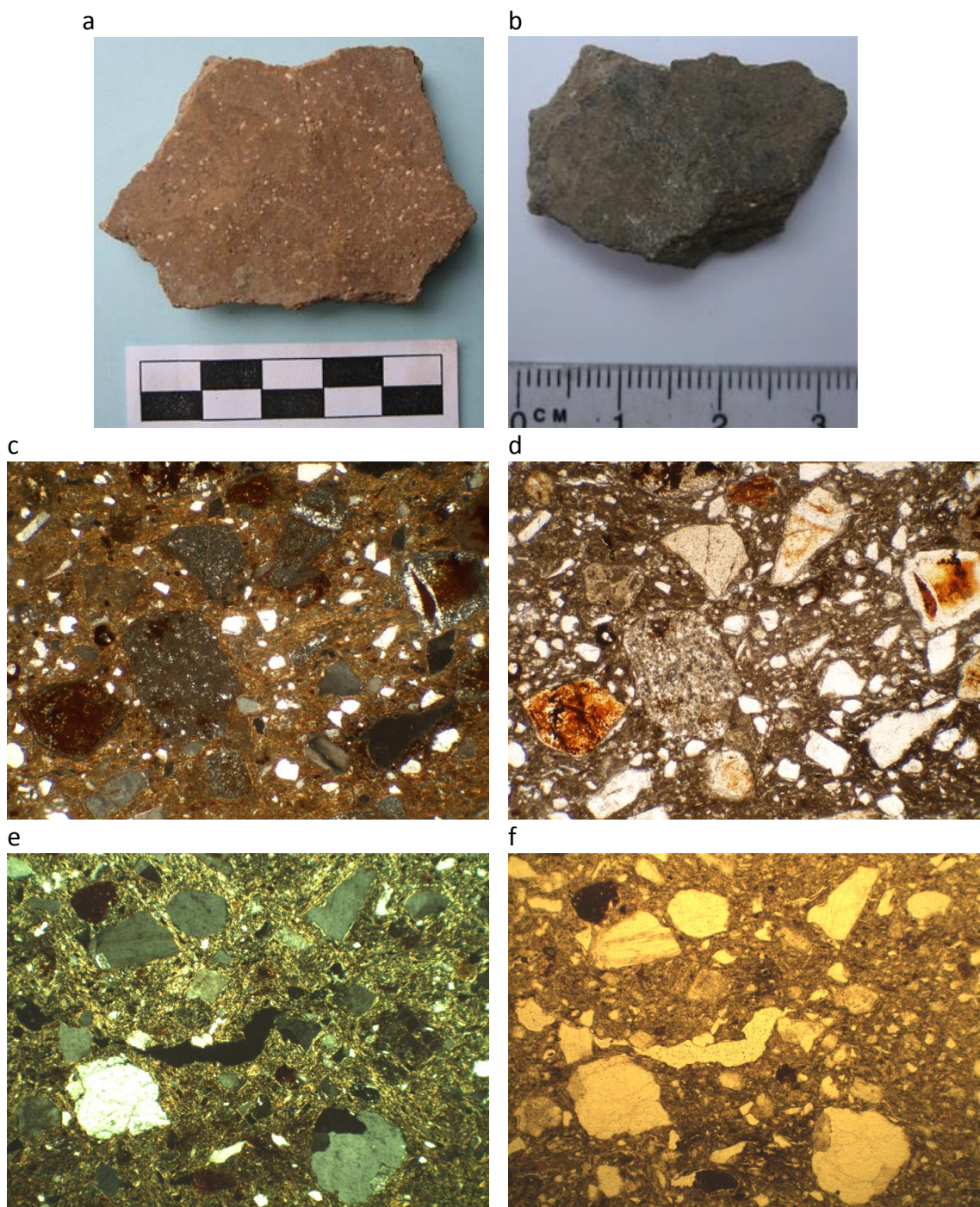


Fig. 6.40 Exteriors and Photomicrographs of Potential Type 17: Brown fabric, Fabrics 5 and 4. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.40a-b Range of Potential Type 17: Brown fabric (Fabric 5: IV-1998-P-13899, Fabric 4: IV-1998-P-20627)

Fig. 6.40c-d Iron rich clay with dominant chert and quartzite (IV-1998-P-13899, sample 008).

Fig. 6.40e-f Iron rich clay with dominant grog and quartz fabric (IV-1998-P-20627, sample 018). XP/PPL. Image width = 2.9 mm

6.12.2 Potential Type 18: Buff fabric

Sherds in 'Potential Type 18: Buff fabric' are undecorated, small, flat and there are few examples. In macroscopic analysis, the sherds are pinkish white (7.5yr 8/2) to reddish yellow (5yr 7/4), with a smooth exterior. In cross section, coarse sand sized rock fragments are visible. This fabric is classified 'Fabric 8: Grog temper fabric' as the thin section shows very fine clay without mineral inclusions and the presence of dominant grog temper. Fine sand quartz grains are only present in the grog temper and there are no fine sand quartz grains in the parent fabric. This suggests that the grog temper is from a different type of ceramic with different clay composition than the final finished vessel. 'Potential subtype 18: Buff fabric' has the same fabric as 'Subtype 6iii: Carved Paddle (White) F8'. However, the macroscopic technology is vastly different. The surfaces of 'Subtype 6iii' have carved paddle impressions and seem to have a white slip which is visible in thin section representing a different technological process to 'Potential Type 18' which is undecorated and not slipped. Despite having the same fabric, it is unlikely that the two examples come from the same vessel.

Fabric 8 is completely different to Fabrics 1 to 9 in terms of clay and technology. The clay matrix does not contain the coarse, medium or fine sand sized alluvial inclusions, such as quartz inclusions and chert, found in other fabrics. Although other fabrics contain grog temper, the grog temper in Fabric 8 is different to the grog temper in Fabrics 1, 2, 4 and 6. The composition of the grog temper in Fabrics 1, 2, 4 and 6 is denser and darker brown in XPL and contains chert which is not found in the grog temper of Fabric 8. The difference in paste show that Fabric 8 is from a different clay source to Fabric 1, 2, 4 and 6. It is unknown, what the rest of the vessel would have looked like, especially the form. No buff coloured rims have been identified at Ille so far.

Summary of correlating attributes for Potential Type 18: Buff fabric	
Fabric	Fabric 8: Grog temper fabric
Surface treatment	Surface decoration – none

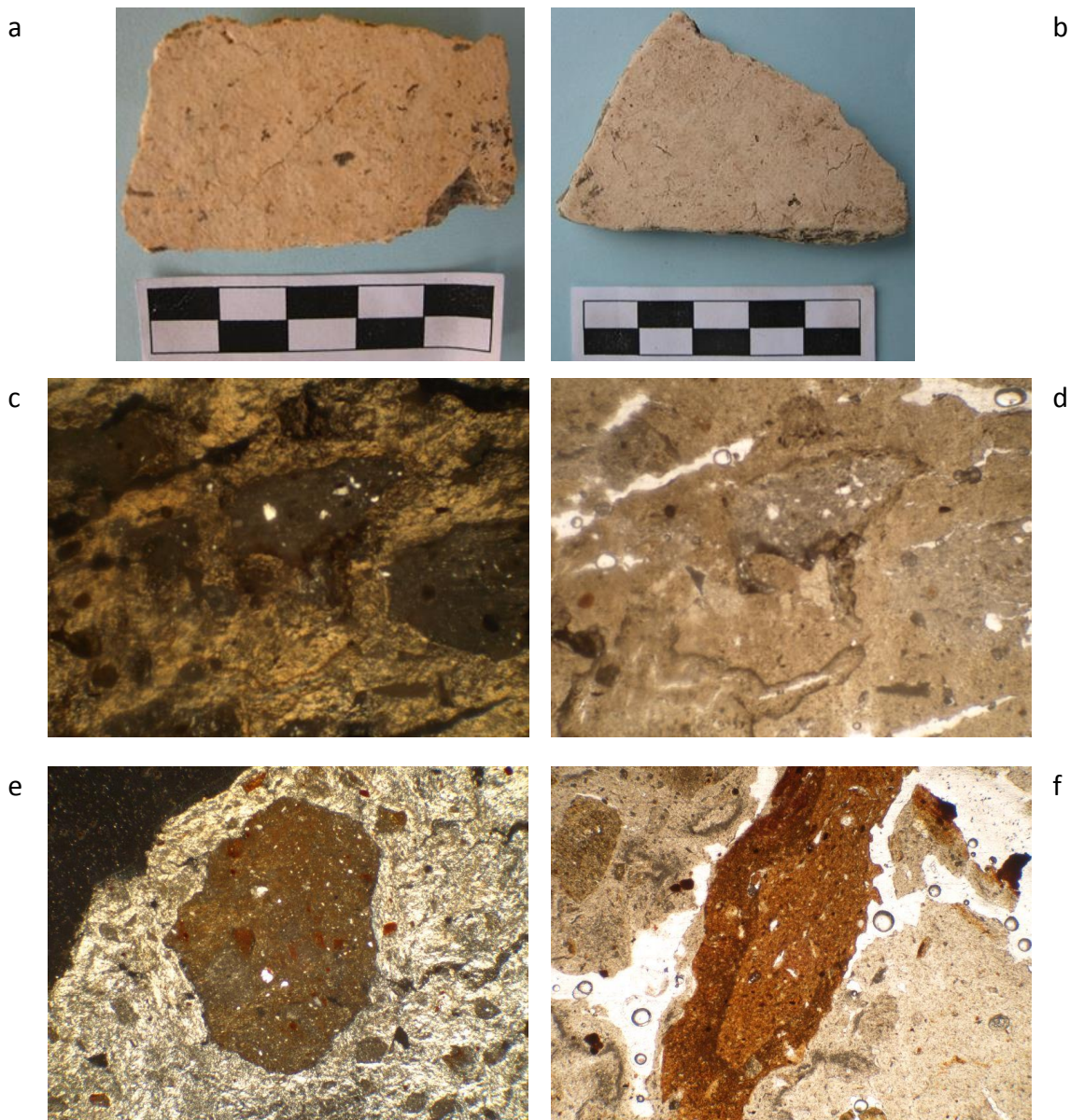


Fig. 6.41 Exteriors and Photomicrographs of Potential Type 18: Buff fabric, Fabric 8. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.41a-b Range of Potential Type 18: Buff fabric (IV-1998-P-13999, IV-1998-P-37079)

Fig. 6.41c-d and 6.41e-f Very fine clay without coarse inclusions and dominant grog temper. All grog temper inclusions contain fine sand sized quartz that is not present in the parent fabric. (IV-1998-P-21607, sample 013). XP/PPL. Image width 18a-b = 2.9 mm

6.12.3 Potential Type 19: Rice temper fabric

'Potential Type 19: Rice temper fabric' is undecorated and shares the same fabric as 'Subtype 6ii: Carved Paddle (Rice) F9' and classified 'Fabric 9: Rice temper fabric' despite being macroscopically different (compare fig. 6.19b with fig. 6.42a-b). Rice temper impressions were visible on the exterior of the sherds. These were examined by macroscopic analysis, stereomicroscope, Scanning Electron Microscopy (SEM) and thin section petrography and dated by Accelerator Mass Spectrometry (AMS) and Optically Stimulated Luminescence (OSL). Stereomicroscope show clear microtubercle impressions of rice husk which has a distinctive and diagnostic checkerboard pattern. Other impressions show linear venations which appeared to be straw (figs. 6.42c-d). The components of the rice plant identified using SEM were the husk, culm, awn, rachis and leaf/blade (lamina). These terms refer to the morphological parts of the plant. The majority of the plant components present in the sherd are the husk and the culm. In agricultural terms, the husk is the chaff which refers to the shell of the separated rice spikelet and the culm refers to the straw (stem), therefore, the ceramics are chaff and straw tempered.

SEM results show husk impressions (fig. 6.42e) with the diagnostic outer layer of phytoliths, the double-peaked cells of *Oryza*, which are only found in the rice genus and thus identifying it as rice (Harvey and Fuller 2005; Terrell *et al.* 2001). Specifically, the impressions are the *Oryza cf. sativa* variety which is a domesticated rice crop (D. Fuller pers. comm. 2010). Fig. 6.42f shows a sample of *Oryza sativa* L., modern reference material of unhulled whole spikelet of an intact rice grain (USDAARS P1584566 from Bhutan, local variety name Phudugey) for comparison with fig. 6.42e at common scale. This unequivocally determines the inclusions as rice husks. In thin section, the paste was made of very fine clay without mineral and rock inclusions apart from very few coarse sand sized quartz inclusions and frequent fine sand sized quartz inclusions which were naturally occurring inclusions in the clay and not added temper. The paste was prepared by the addition of rice temper figs. 6.42g-h).

Although much of the rice husk temper rice would have been destroyed during the firing process, it is assumed that some of the organic component remained in the clay.

The organic component of ceramics tempered with crop-derived material has been used for dating in the past, and have provided a basis for a chronology of early pearl millet cultivation in western Africa (Manning *et al.* 2011), and for the presence of rice in parts of South and Southeast Asia (Bellwood *et al.* 1992). Although it is clear that such dates incorporate old carbon from the clay as well as that from the tempering plant material they still provide dates within a few centuries of the actual age (Higham *et al.* 2009; Manning *et al.* 2011).

The two samples 004 and 015 were submitted for AMS and OSL to the Oxford Radiocarbon Accelerator Unit, University of Oxford. However, these attempts at dating the rice-tempered sherds were unsuccessful. The samples produced no yield of carbon that could be AMS radiocarbon dated. No signal could be detected for OSL dating.

The addition of rice temper has implications for pottery practice, as the paste preparation clearly involves a different learning tradition and technology; and for the presence of rice agriculture in the Dewil Valley. This is discussed in Chapter 7. Full analysis of the rice temper can be found in Appendix D.

Summary of correlating attributes for Potential Type 19: Rice temper fabric	
Fabric	Fabric 9: Rice temper fabric
Surface treatment	Surface decoration – none

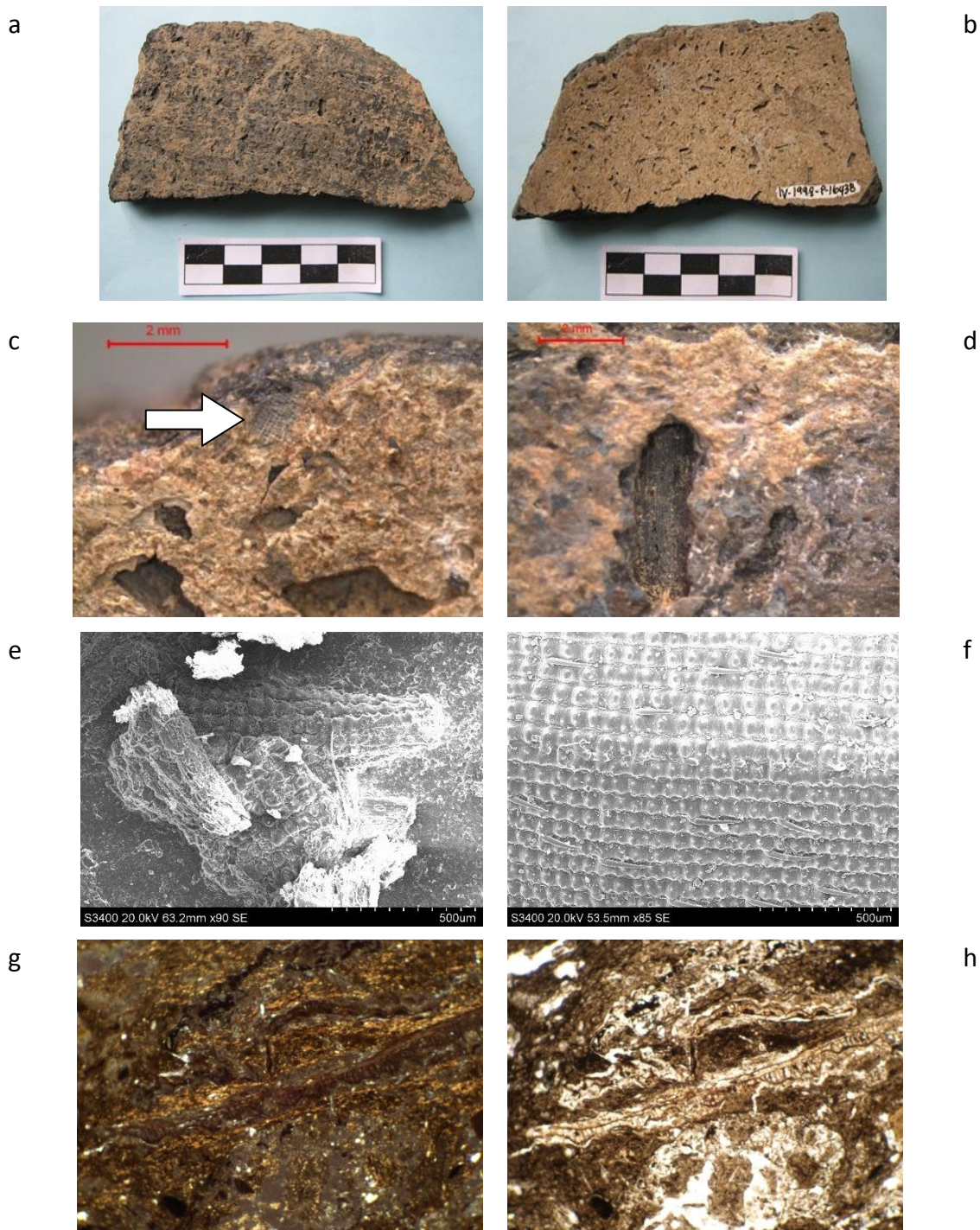


Fig. 6.42 Potential Type 19: Rice temper fabric, Fabric 9. Image scale = 0-5 cm (image: Y. Balbaligo)

Figs. 6.42-b Exterior and interior of intact earthenware sherd in hand specimen

Figs. 6.42c-d Stereomicroscope image of husk impression and straw venations

Figs. 6.42e-f Chaff impressions (IV-1998-P-20636, sample 004) and modern *Oryza sativa* L.

Figs. 6.42g-h Thin section very fine clay without coarse mineral inclusions and dominant rice temper (IV-1998-P-16438, Sample 015). XP/PPL. Image width = 1.45 mm

6.12.4 Category 20: Body sherds uncategorised

So far the types and potential types categories have demonstrated a diverse range of fabrics in terms of clay matrix and paste preparation. Category 20 contains undecorated sherds without diagnostic attributes, such as form elements or decoration. However, the body sherds in this category may belong to ceramic types and potential types already accounted for in the sample. Within this category there are recognisable fabrics from Fabrics 1 to 10. There may be more types of fabric but without further thin section analysis it is difficult to be certain at this stage.

The majority of the earthenware was undecorated body sherds. This is to be expected as for most vessels, far more sherds result from the breakage of the body which has a greater surface area than from the proportionately smaller rim and base regions (Rice 1987: 223). There was a high likelihood that vessels could be refitted as they were excavated together from secure contexts. However, it was not possible to carry out a refitting exercise because during accessioning rims and body sherds had been split up and grouped by form element. It was not possible to do full reconstructions because it was difficult to match rims to body sherds and difficult to reconstruct body sherds without rims. Furthermore, sherds had not been cleaned fully so it was difficult to see distinctions in fabric or which sherds could fit together. During fieldwork, there were time and space constraints. It was not the best use of time to wash, dry (difficult due to humidity), analyse and refit the vessels.

Sherds fragments in this category varied in terms of size and shape without diagnostic elements. However, a group of sherds stood out. There were some large fragments which, if anything, could be burial jars. Fig. 6.43 shows the largest sherd recovered at Ille, 285 x 100 mm and weighed 80 gm. Because of the size of the vessel, sherds were mostly flat. However, the large sherds have slight curves, showing that the vessels were rounded. These large vessels were thick, the average thickness being 1 cm. This sherd was not washed, therefore, the fired colour was not visible, however, coarse inclusions were visible which were similar to the sediment of other types. No paddle impressions were visible. However, an undecorated paddle might have been used. Bumps on the interior surface could be from the paddle and anvil. The core was dark

grey showing no change in colour and very thin external margins. It is assumed that all earthenware pottery was open-fired at a low temperature in a reduced environment. In these sherds, the carbon may have burnt out leaving no core. Body sherds of this size could be matched to 'Potential type 13: Large brown rim'.



Fig. 6.43 Category 20: Body sherds uncategorised, IV-1998-P- 22608, largest sherd recovered at Ille. Image scale = 0-5 cm (image: Y. Balbaligo)

6.13 Remarks on the studied ceramic assemblage

Examined sherds recovered from years outside of 2004 to 2008 show consistency across the entire studied assemblage. With a few exceptions, similar designs, decorative techniques, forms and fabrics were found across all years (see Appendix A). The surface sherds at Ille also show this consistency. These sherds were analysed to draw comparison with surface sherds at other sites in the Dewil Valley. As the other sites were not excavated, this allows a parity of comparison between surface finds. The earthenware ceramic assemblage of six sites in the Dewil Valley, two sites in the wider El Nido area and three Islands off the west coast of El Nido were examined (see Appendix B). The ages or periods of the ceramics and levels of disturbance are currently unknown. Furthermore, the exact function of the caves and rockshelters is also unknown. However, when compared to the surface assemblages at Ille, the El

Nido ceramics had some common Potential Types but overall, the El Nido ceramics were technologically different in fabric, form and decoration to the Ille earthenware. While there are shared ceramic practices, it is likely that the ceramics in wider El Nido represent different learning traditions and thus different communities of practice (see Chapter 7).

High-fired ceramics found at Ille included glazed and non-glazed stoneware, celadon and porcelain (see Appendix A). These kiln fired ceramics are likely to have been trade items and manufacture outside of Palawan, from China since the ninth century AD (*cf.* Valdes 1992, 17). The high-fired sherds were found on the surface and from sub-surface fills representing Contact Age deposits (c.1000 AD). In later years, they were found in the same contexts as earthenware, but high-fired sherds were not found in all contexts. There was a limited presence of high-fired ceramics including tradeware found in the Dewil Valley. The earthenware and high-fired ceramics found during the ascent and at the top of the Ille tower bear little resemblance in fabric, form or decoration to the earthenware on the surfaces or during excavations. The tower ceramics may represent different activities during the later occupation of the cave to those found in excavation during the earlier use of the cave.

Harris matrices were constructed to assess the degree to which the Ille stratigraphy could be used to develop a chronology of the ceramics at the site, to establish if the ceramics were associated with other material culture and understand how ceramics were associated with burials (see Appendix E and F). It was clear during the excavations that the site was disturbed. This was especially evident in the upper phases of the site which comprised the cemetery. While the Harris matrices could be divided into phases to enable analysis of the ceramic assemblage within that phase, overall, the matrices could not be used on their own to determine a ceramic chronology due to the disturbed nature of the site. This prevented a clear pottery sequence from being established. However, the analysis has clearly established that the ceramics were not directly associated with the burials as grave goods. Despite this, it is likely that the ceramics were still part of the burial practice but it is unlikely that the ceramics were burial jars.

The previous sections have shown that variation exists within the Ille overall assemblage. Correlating ceramic attributes have been grouped together to form wares, types and subtypes. Types 1 to 11 show strong correlations. This identifies them as clear ceramic types with shared technological process which point to a shared learning tradition. The Potential Types 12 to 20 have the potential to be incorporated into existing types or to form further types within the studied assemblage. There are other decorated and uncategorised sherds which do form part of the typology because they do not have correlating attributes. These groups have the potential to form types. However, at this stage there is not enough information to securely group them into types. Some of the sherds are 'one-offs' or 'unique' and some classed as 'special finds' which are currently anomalies in the studied assemblage without parallel.

Difference in ceramics attributes point to different technological practices for the manufacture of ceramics. This thesis proposes that different technological practices suggest different learning traditions and networks. Therefore, variation in ceramics can be seen as an indicator of learning traditions by differing communities of practice. The following section discusses the production sequence as a basis for identifying the elements of pottery technology that allows for the reconstruction of potters' behaviour in the past. The production sequence is discussed as a whole and differences in practice that result in variation in ceramic attribute is highlighted.

6.14 The *chaîne opératoire* and technological practices

The methods of analysis have sought to categorise the Ille earthenware into ceramic types to identify differences between the ceramics. Thus, it is the variation in the technological practices and attributes from repetitive human actions that point to different learning traditions. A review of the literature on pottery technology shows that there is a great potential for many variable steps in the *chaîne opératoire* of pottery formation (for example Miller 2007; Rice 1987; Rye 1981). Based on macroscopic analysis and examination of the composition and microstructure in thin section, it has been possible to identify many of the technological steps involved in

production including the management and preparation of raw materials, paste preparation, forming techniques and firing conditions. These provide evidence for the choices and behaviours of the potters. Table 6.12 synthesises the relevant fundamental steps of pottery production. The left hand column identifies the essential major stages in the production process that all ceramics undergo. The right hand column indicates non-essential processes which highlight the variation in technological practices for the different ceramic types identified in the analysis.

Rye (1981: 3) argues that some of the processes are essential, such as gathering materials and forming steps, and that the sequence of these actions is fixed. Non-essential processes, such as surface decorations, may be introduced at varying points or omitted. Although variation occurs during the essential steps, it is the non-essential steps which provide the most obvious and easily observed evidence of differences. The products of the non-essential steps, such as decoration, have been widely used by archaeologists for classification and comparison. This concentration on decoration has also been the case in the Philippines and in other studies of Southeast Asian ceramics, but without examining the underlying technological practices. This section examines the production sequence and technological variation and how this can be analysed through attributes.

	ESSENTIAL	NON-ESSENTIAL
1	Management of raw materials	
	<ul style="list-style-type: none"> Identifying sources of raw materials Clay selection, extraction and transportation Fuel selection and collection 	<ul style="list-style-type: none"> Temper selection and procurement Tool selection and collection
2	Raw material preparation	
	<ul style="list-style-type: none"> Processing clay <ul style="list-style-type: none"> Size reduction by pounding, grinding Drying Sorting Fuel preparation 	<ul style="list-style-type: none"> Temper preparation <ul style="list-style-type: none"> Quartz sand and ceramics for grog temper <ul style="list-style-type: none"> Crushing, sorting Rice temper preparation <ul style="list-style-type: none"> Threshing, dehusking, cutting Pigment/infill preparation Tool preparation <ul style="list-style-type: none"> Shaping of implements for decoration Preparation of paddle
3	Paste preparation	
	<ul style="list-style-type: none"> Formation of clay body (pre-forming) <ul style="list-style-type: none"> Mixing of clay, water Kneading 	<ul style="list-style-type: none"> Addition of temper
4	Production	
	<ul style="list-style-type: none"> Shaping of body and rims (primary forming) Vessel defined (secondary forming) Drying 	<ul style="list-style-type: none"> Rim formation Hand fashioned/drawing Pinching Slab building Pedestal bowl and foot rings joined Paddle and anvil (plain or decorated) Scraping, smoothing
5	Surface modification	
	<ul style="list-style-type: none"> Surface finish <ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Surface decoration <ul style="list-style-type: none"> Incising, impressing, infilling Decorated paddle and anvil Handle applied/appliqué Surface finish <ul style="list-style-type: none"> Slip Paint Polishing, smoothing
6	Firing - different firing methods/conditions	

Table 6.12 Essential and non-essential production sequence of earthenware ceramics studied from Ille Cave. Left column identifies all major necessary stages. Right column shows potential for variation in production.

6.14.1 Management of raw materials

The management of raw materials stage (1) requires selecting and collecting materials. This may happen away from the pottery making site. The petrographic analysis shows that there were at least 10 different fabrics from different geological environments showing different clay sources (see provenance section). Therefore, variation exists in the type of clays selected. Clay extraction sites have not yet been found. It is not known how clays were selected and gathered, and the distance and mode of transportation to the pottery making site. At this stage, certain clays would have been identified as candidates for the addition of temper. The clays are from secondary (sedimentary) deposits and most are fine grained with relatively few silt or sand inclusions, therefore, there has been a decision making process to modify the clays by the addition of temper. There are at least 3 different types of temper technology observable in the thin sections (grog, quartz sand and rice). Grog is an anthropogenic synthetic inclusion. It is likely that wasted or broken earthenware used as grog temper would have been readily available from the pottery making area and this adds another sequence in the production process. Quartz sand would need to have been sourced. As Palawan is littoral, it is most likely the sand in the Ille ceramics were taken from riverine, estuarine or coastal environments.

The selection and procurement of rice temper would have begun in advance of pottery making, regardless of whether the potters were also the producers of rice or procured it from rice producers. The samples do not contain bleb (fired clay mixed with rice temper) commonly found in Thailand and Vietnamese earthenware ceramics (*cf.* Vincent 2000: 267).

In terms of tools selection and collection for decoration, although the specific tool or material cannot be inferred, the shape and effects of tools are observable. For example, wood for the paddle, sticks for incising or reeds/bamboo for stamping would have been prepared as part of the next stage. As there were forests in the region, the tools could have made from trees but were, therefore, perishable. No workshops or sites, tools or wasters associated with pottery making have been found. Furthermore, although no evidence of open firing has been found and fuel sources are unknown, it is

certain that fuel, as an essential component, would have been selected and collected which requires time and labour, and would have been prepared as part of the next stage.

6.14.2 Raw material preparation

During the raw material preparation stage (2), the initial processing of clay requires refinement through reduction and sorting, by removing coarse matter (*cf.* Quinn 2013: 154). It is likely clay was broken up which increased the surface area assisting in the uptake of water. This may be done while the clay is left to dry in the sun as small lumps will dry faster and improves the permeability of clay. However, not all coarse materials were removed as can be seen in fig. 6.44a-b showing coarse paste with freshwater gastropods that have not been extracted from the clay. Fabrics 8, 9, 10 are composed of fine clay with few large grains. However, thin section analysis shows that it is unlikely that sieving and levigation methods were used on these fabrics which may suggest that clays were coming from different locations with natural fine clay.

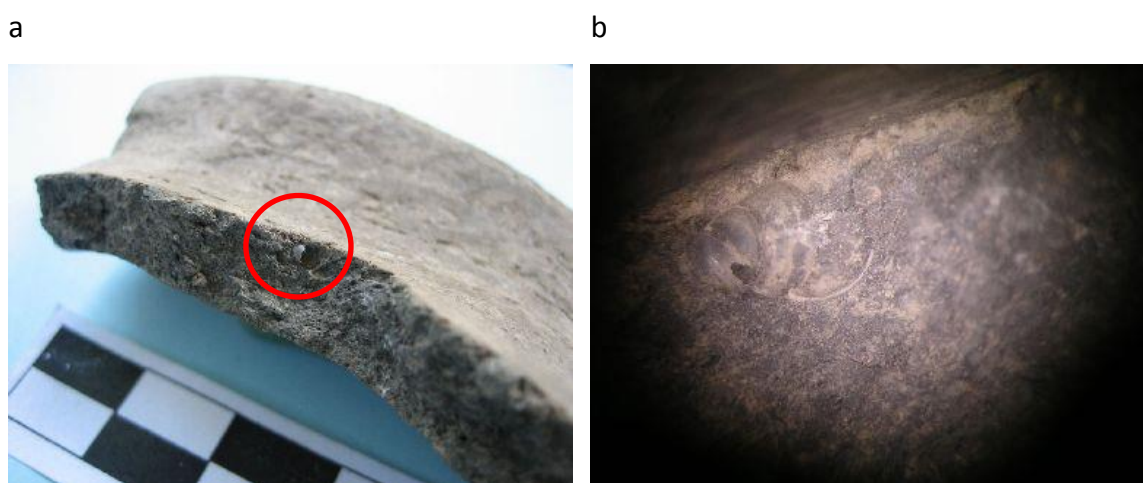


Fig. 6.44a-b Type 14: Restricted rim, coarse paste with freshwater gastropods that have not been extracted from the clay. Digital camera and stereomicroscope (IV-1998-P-18275; image: Y. Balbaligo)

The addition of synthetic temper contributes to the technological properties of the ceramic. It has been used to modify properties of clay during the drying and firing process to reduce of shrinkage, prevent cracking and diminished thermal shock in firing (Lippi *et al.* 2011: 1173; Rice 1987: 407). During firing and the life of a vessel,

temper affects the permeability, heating effectiveness, thermal shock resistance and toughness. Although there have been arguments for the symbolic significance of temper in ceramics (e.g. Vincent 2000), it is unknown whether there were symbolic meanings for the communities who used the three different temper materials as found in the Ille sample.

Thin section analysis shows that the quartz sand temper was coarse and angular. It is possible that the quartz sand grains were juvenile from a slow moving fluvial system or that they were crushed before being added to the paste. While the grog temper would also have been broken up, the grog temper appeared mostly rounded, possibly due to the softer and more friable quality of fired clay. The grog temper may have been broken up with a large stone on a flat surface, however, the methods for crushing and the tools employed are unknown. Grog temper from the same vessels was used in Types 1, 3, 4, 5, 6, 13, 14 and 17 but Potential Type 18 had grog temper from a different type of ceramic to the final finished vessel as the clay compositions were different.

As discussed above, the stereomicroscopy, thin section and SEM analysis show that the rice temper (Potential Type 19 and Subtype 6ii) was comprised of chaff and straw indicating that the temper was collected during the later stages of rice processing as they are final by-products of crop processing (Harvey and Fuller 2005). In particular, straw and chaff are by-products of the threshing and dehusking process respectively and, therefore, come from different stages in the crop processing sequence. Both wild and domesticated rice require dehusking, while only domesticated rice requires threshing (Fuller *et al.* 2010).

Threshing is the process of separating the rice spikelets from the straw, traditionally carried out on a threshing floor. Winnowing, traditionally done by tossing the grain using a broad plate-shaped basket, separates the loose chaff from the grain and its by-products include straw and leaves. Pounding the spikelets in mortars is the traditional process for dehusking, which is the removal of the chaff from the grain and the remains can be winnowed further (Harvey and Fuller 2005; Lippi *et al.* 2011). Thus,

chaff is the waste from dehusking after the threshing has taken place. In processing crops, threshing refers to the seasonal activity once the rice plant has been harvested to disarticulate the rice spikelet, while dehusking may take place on a more regular basis and crops may be processed in a piecemeal fashion as need arises (Harvey and Fuller 2005: 745).

Although Vincent (1998: 8) states that access to wild rice would be difficult and irregular, and concludes that it was unlikely that wild rice was a reliable source of temper, foragers who collected wild rice intensively could have had routine access to wild rice husk. Indeed, a few examples of rice-husk tempered ceramics are associated with late foragers in northern India (Harvey *et al.* 2005). However, the presence of threshing waste, also in these ceramics, implies that this comes from domesticated rice. The quantity suggests that there was indeed access to substantial quantities.

Depending on social organisation, threshing and dehusking may have taken place in the same area and at the same time (D. Fuller pers. comm. 2010). It is likely that the disarticulated straw was gathered and saved separately from the spikelets as the straw was threshing waste. Under SEM, the husks appear to have been cut or broken and appear in different sizes, in poorly mixed clusters. This process would have required its own tools. Fuller *et al.* (2007: 73) argue that threshing would have occurred in the vicinity of cultivation to minimise transportation of harvested plants, while winnowing of dehusking waste for temper may have taken place near pottery production sites. Thus, the threshing and dehusking process implies that agriculture could have co-existed with pottery production and could have taken place in the same environment.

Ethnography in Southeast Asia shows that pounding and winnowing often is done in the habitation space (Paz 2002: 279). The chaff and straw were either saved from when the threshing and dehusking took place and then used by the local potters themselves. If the rice producers were not the same as the potting community, it is possible that the by-products were traded/exchanged/gifted to other communities of practice who were not rice producers and used for pottery tempering. Chaff and straw could also be used as tempering material for clay used in building materials such as

mudbrick (though not common in the region), animal feed and as a fuel source for firing when mixed with dung (Van der Veen 1999) as straw waste alone would burn too quickly.

The inclusion of chaff and straw temper in the two Ille samples shows that they were taken from the threshing and dehushing process which comprise two the separate steps of the rice production sequence. Although it is possible that a small amount of straw contaminated the stored rice spikelets, this is expected as a rare contaminant only. Sample 015 (Potential ceramic type 19: Undecorated rice temper fabric) contained predominantly straw and other elements such as the rachis, awn and leaves which would have been produced by threshing and gathered up from the threshing floor. Few chaff inclusions, which are produced from the dehushing process, are present. The straw temper inclusions are roughly the same in size and some show clean breakages across the short axis of the plant indicating they may have been intentionally cut with an implement while some appear uneven, indicating they may have been broken during the threshing process (fig. 6.45). Sample 004 (Subtype 6ii: Carved Paddle (Rice) F9) contains predominantly chaff temper taken from the dehushing process, however, a few other plant elements such as straw are also present. The chaff may have been gathered from where it was dehushed. If threshing took place in the same space, this might account for extraneous materials. It is certain that the temper is a waste product because no whole rice grains or spikelets are present in the sherds as evident on the surfaces and in thin section. The SEM images of the chaff show that dehushing had definitely taken place (fig. 6.45). The chaff inclusions are different sizes and break before the spikelet base, glumes and apex. The plant materials appear damaged and fragmentary from the pounding.

Due to the differences in rice components in samples 004 and 015, it is possible that the two sherds show two different stages of rice processing by the same group of people, or the two rice components were produced by two different groups of people using different parts of the rice plant as temper, and even made in two different locations. Furthermore, these two ceramics are different in forming technology, style and surface finishing. Although macroscopic technology does not guarantee difference

in social groups, the two sherds show different learning techniques and traditions, therefore, they are potentially two different communities of practice.

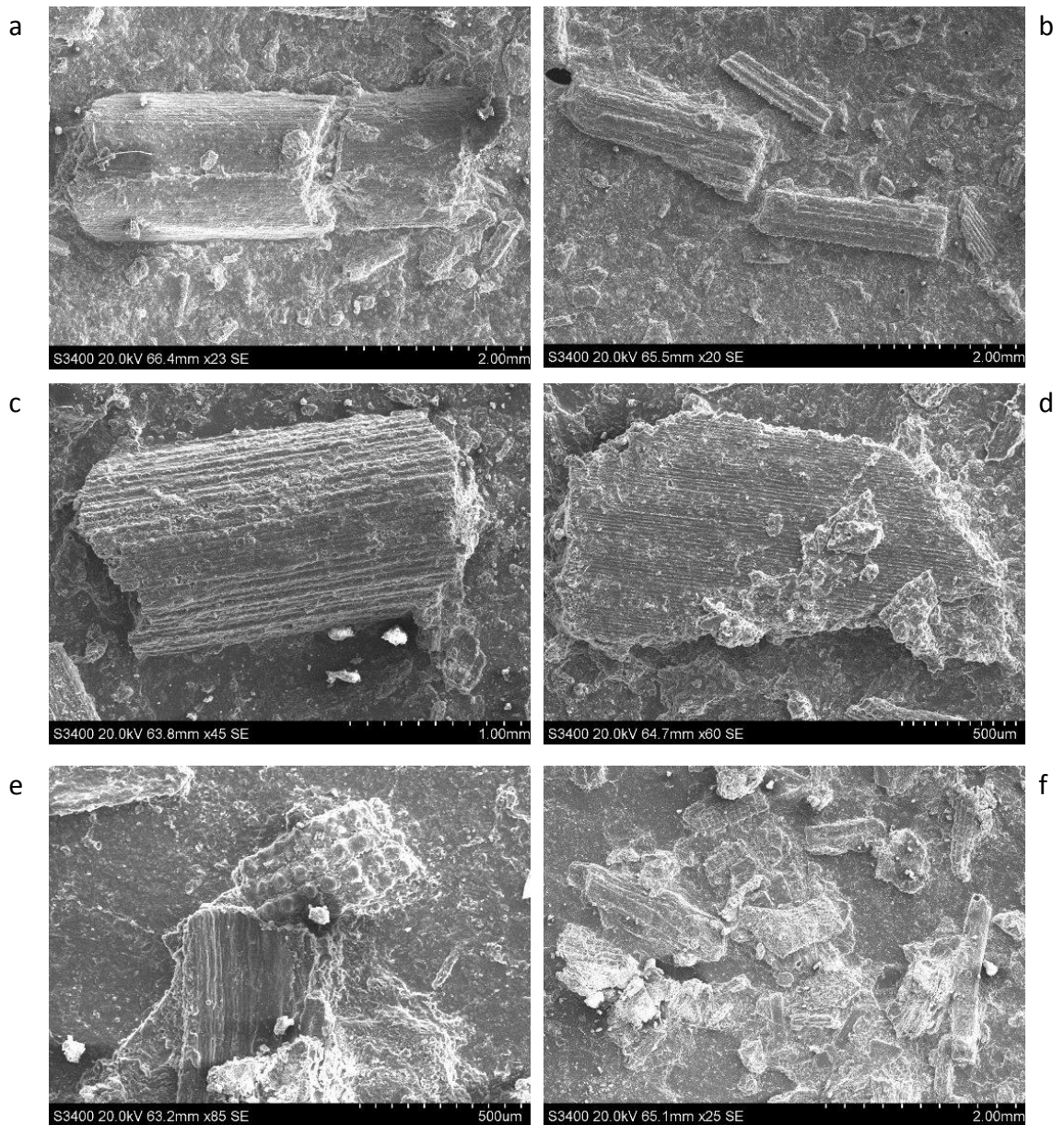


Fig. 6.45 SEM images of the chaff and straw temper showing evidence of dehusking (image: Y. Balbaligo)

Fig. 6.45a Impression of culm with culm node (IV-1998-P-16438, sample 015).

Fig. 6.45b Impression of culm, rachis and leaves. Clean breakages across the short axis of the plant indicating they may have been intentionally cut with an implement (IV-1998-P-16438, sample 015).

Figs. 6.45c-d Impression of leaf/blade (IV-1998-P-16438, sample 015).

Figs. 6.45e-f Impression of cluster of husk, culm and leaf sample (IV-1998-P-20636, sample 004)

In terms of preparing pigments, due to their colour, it is likely that slips were prepared from the same clay as the vessel and paints were prepared from red ochre (hematite) which could be sourced in the local area which have also been found during excavation. Infill for Type 1 and Type 10 were calcium carbonates and effervesce on contact with dilute hydrochloric acid (10% HCl) and may be made from crushed and heated shell or limestone. The exterior and interior surfaces of Subtype 6iii show a layer which may be “tree resin” (B. Solheim pers. comm. 2009). However, there are few of this type and it needs further examination (*cf.* Foster 1956).

6.14.3 Paste preparation

Literature on pottery technology has been divided into three stages: pre-forming, primary forming and secondary forming techniques (*cf.* Orton *et al.* 1993; Rice 1987; Rye 1981). Pre-forming or paste preparation (3) involves the formation of the body by mixing clay and water, the prepared temper, and kneading manually. This distributes the material evenly and eliminates pockets of trapped air. No blending of clays can be seen in thin section, although this process is common in Thailand and Vietnam (Vincent 2000: 274) and seen in prehistoric and modern Philippines (Yankowski 2008: 13).

6.14.4 Production

During the primary forming process (4), the clay is converted into its vessel form. In the assemblage studied there are three main forms; pedestal bowls with foot rings, restricted rims with rounded bases, and unrestricted rims with rounded bases (see table 6.13). All vessels were Hand fashioned with the vessel walls drawn up. Some smaller and thinner restricted and unrestricted vessels may be made by the pinching technique, however, vessels do not survive in their entirety to assess this. There are a number of ceramic types where only the body sherd survives and there is no other diagnostic element to indicate form. However, where a paddle impression is present on the body, it is most likely that the vessel had a restricted rim with a rounded body made by hand fashioning. Large vessels (such as figs. 6.20 and 6.42) may be made by slab building to allow for the large size, however, there are few of these vessels in the Ille sample and the sherd fragments that survive need closer examination. There is no evidence for moulding or coil building other than from addition of the rims, neither in

thin section nor in fracture, and the vessels do not have the diagnostic marks of wheel made pottery.

In this study, types have been classified based on correlating attributes. Where the type has an extant rim, the rim shapes are found to be the same across the sample and all formed in the same way. Uniform restricted rims can be seen with 'Type 8: Incised Triangles', 'Type 9: Shell impressed', 'Type 13: Large brown rim' and 'Type 16: Flat triangular rim'. Discounting size and thickness, of the forms category 'Type 14: Restricted rim' and 'Type 15: Unrestricted rim' showed there were slight variations in forming technique especially in the formation of the rim. Figs. 6.46 and 6.47 show restricted and unrestricted rim profiles and the variation in rim shape and size.

There seems to be variation in the accuracy (and potentially haste) when forming the rims of 'Type 14: Restricted rim'. Not all rims are tidy. Fig. 6.48a-b shows that the exterior rim was poorly folded under the rim lip and not smoothed or polished over when compared to other 'neater' restricted rims in this category. Although the exterior rim, neck and upper body of fig. 6.48c was smoothed down, the interior shows that the clay was pushed further inside the vessel forming an excess lump of clay at the interior of the neck which cannot be seen on the exterior but can be seen in profile. Fig. 6.48d shows a neatly made rim where the exterior and interior has been smoothed and polished. However, in the interior of the vessel, there is a clear line where the polishing stops where there is restricted access and the remainder of the interior of the vessel is rough and unpolished. This shows the extent that restricted rims could be polished.

Although there is no evidence of slab building or rim appliqué across the body of the vessels, fig. 6.49 shows an unusual rim that has been made separately to the body and broken at that point of joining. This can be seen on the underside of the rim. There is substantial scoring of the clay which would have been the point at which the rim would have attached to the body.

Form	Ware/category	Type no.	Type	Sub-type no.	Subtype/form element
Pedestal bowl	Red Ware	1	Red-Slipped Decorated	1i - x	Foot rim
Pedestal bowl	Red Ware	3	Red Ware Plain	3i - x	Foot rim
Pedestal bowl	Forms	12	Pedestal bowl	12i	Pedestal bowl F7
Pedestal bowl	Forms	12	Pedestal bowl	12ii	Pedestal bowl
Restricted rim	Red Ware	2	Red Ware Decorated	-	-
Restricted rim	Tool Decorated	7	Impressed restricted rim		
Restricted rim	Tool Decorated	8	Incised Triangles	8i	Incised Triangles F7
Restricted rim	Tool Decorated	8	Incised Triangles	8ii	Incised Triangles F11
Restricted rim	Tool Decorated	9	Shell impressed		
Restricted rim	Tool Decorated	13	Large brown rim		
Restricted rim	Forms	14	Restricted rim		
Restricted rim (most likely)	Grey Ware	4	Grey Cord Marked		
Restricted rim (most likely)	Paddle Impressed	5	Bound paddle	5i	Loose Cord Marked F4
Restricted rim (most likely)	Paddle Impressed	5	Bound paddle	5ii	Loose Cord Marked F12
Restricted rim (most likely)	Paddle Impressed	5	Bound paddle	5iii	Tight Cord Marked F3
Restricted rim (most likely)	Paddle Impressed	6	Carved Paddle	6i	Carved Paddle F4
Restricted rim (most likely)	Paddle Impressed	6	Carved Paddle	6ii	Carved Paddle (Rice) F9
Restricted rim (most likely)	Paddle Impressed	6	Carved Paddle	6iii	Carved Paddle (White) F8
Restricted rim (most likely)	Paddle Impressed	6	Carved Paddle	6iv	Carved Paddle F11
Unrestricted rim	Forms	15	Unrestricted rim		
Unrestricted rim	Forms	16	Flat triangular rim		
Unrestricted rim	Fabrics	17	Brown fabric	17i	Brown fabric F5
Unrestricted rim	Fabrics	17	Brown fabric	17ii	Brown fabric F4
Unknown	Fabrics	11	Painted		
Unknown	Fabrics	10	Incised, impressed, infilled		
Unknown	Fabrics	18	Buff fabric		
Unknown	Fabrics	19	Rice temper		

Table 6.13 Forms and the wares, types and subtypes they occur in.

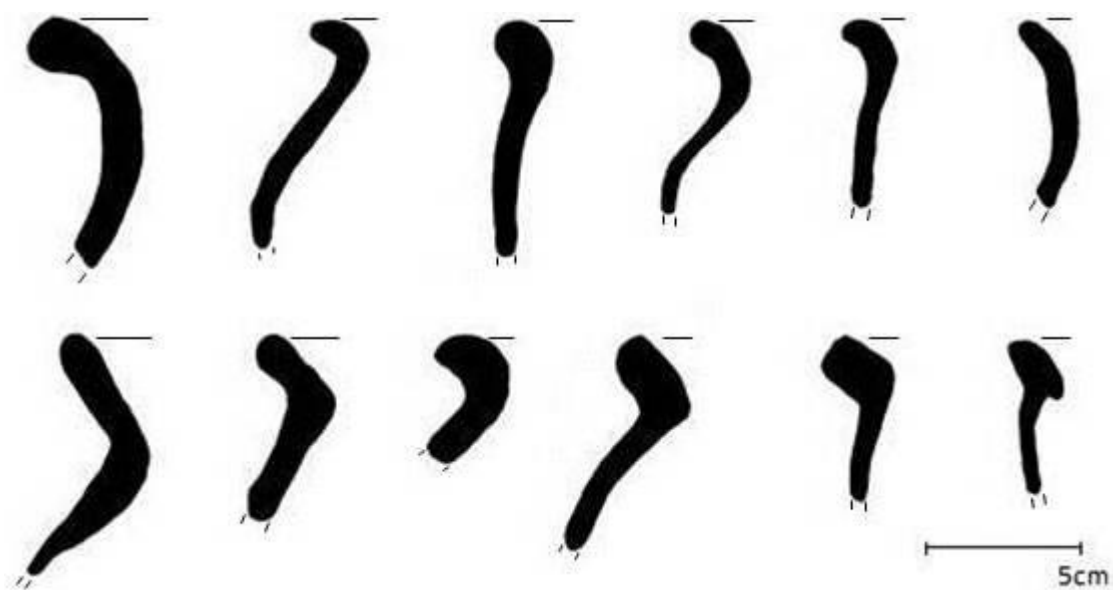


Fig. 6.46 Range of Type 14: Restricted rims in profile (image: Y. Balbaligo)

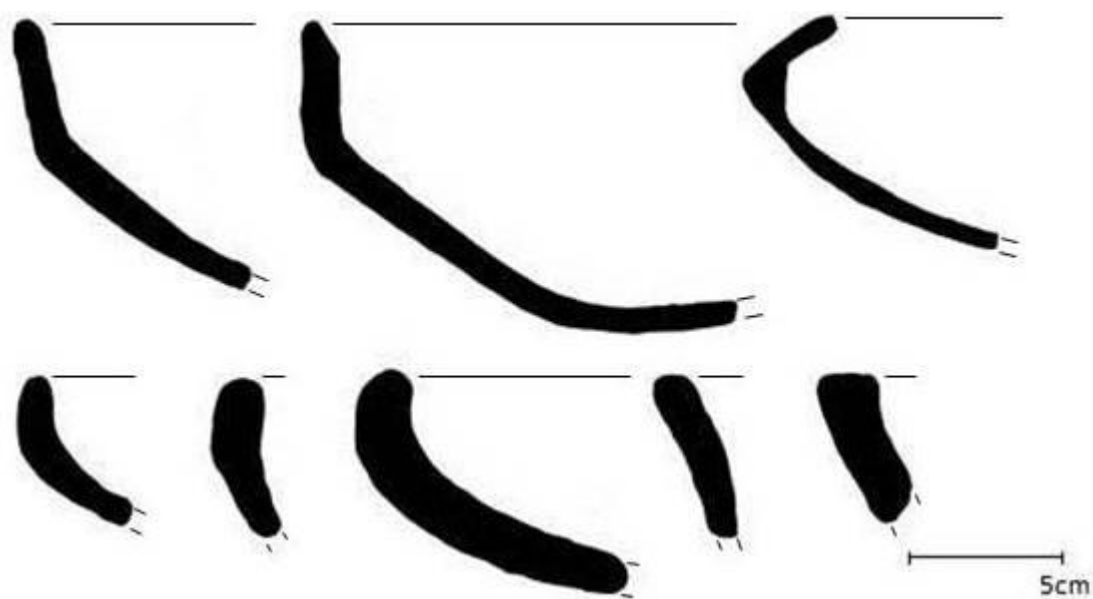


Fig. 6.47 Range of Type 15: Unrestricted rims in profile (image: Y. Balbaligo)



Fig. 6.48 Range of Type 14: Restricted rims, variations in accuracy. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.48a-d (IV-1998-P-18531, IV-1998-P- 43276, IV-1998-P- 42096, IV-1998-P-43430)



Fig. 6.49 Restricted rim showing separate attachment of rim to body. Substantial scoring of the clay. Image scale = 0-5 cm (IV-1998-P-17613; image: Y. Balbaligo)

With the pedestal bowls, there are variations in forming and form. Variation in form can be seen in the 5 foot varieties of Type 1. Type 12 is the same category of vessel but varies slightly in the shaping process and this can be seen in the final form, such as the shape of the ring foot, when compared to Type 1. Figs. 6.50a-b shows a more upright and cylindrical form when compared to the fanning out of the ring foot of figs. 6.50c-d. Figs. 6.50c-d also show that it is highly polished compared to figs. 6.50a-b. The joins are made as part of the foot rim. Fig. 6.51 shows where the vessel broke at the join in profiles, and it shows the variations in form. It seems that the upper bowl portion and the foot rims were made separately. It is likely that the foot rims were attached to the bowls. There is evidence of scoring on the bowls to enable attachment and vessels break at the foot where the join is the weakest (see fig. 6.52).



Fig. 6.50 Variation of Potential Type 12: Pedestal bowl. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.50a-b Upright and cylindrical foot ring (IV-1998-P-23095)

Fig. 6.50c-d Fanning out foot ring (IV-1998-P-43272, compare with fig. 6.32 for fabric)

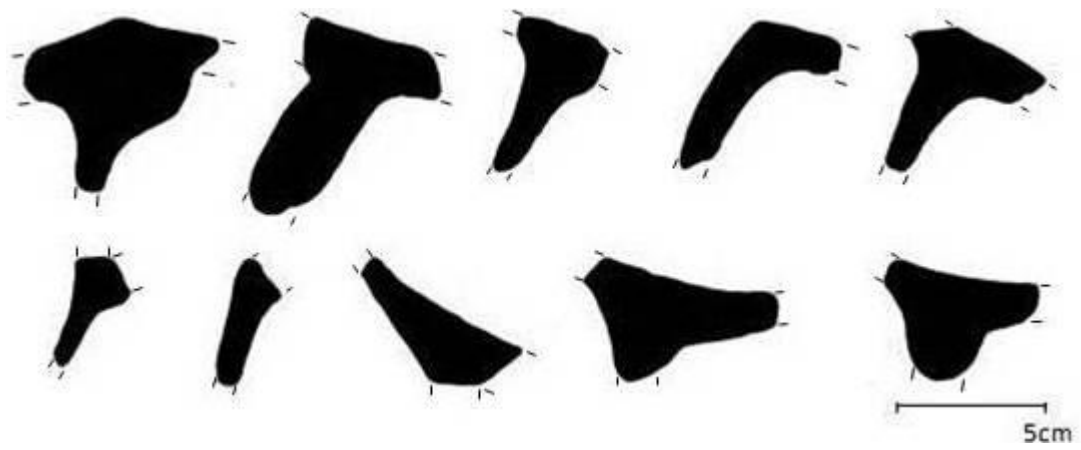


Fig. 6.51 Pedestal bowl joins in profiles (image: Y. Balbaligo)



Fig. 6.52 Interior of pedestal bowl showing scoring. Image scale = 0-5 cm (image: Y. Balbaligo)

Once the primary forming stage was complete, the vessels were dried to leather hard state which was an integral part of vessel forming. The drying rate would have been dependent on seasons due to moisture and humidity. No cracks from drying are visible in the studied assemblage, therefore, drying was successful.

The secondary forming stage, where the vessel was defined and completed, depended on the form of the vessel. Restricted rim vessels with rounded bases were most likely to be paddle impressed. If no paddle impressions were present on the surface, they may have been paddled with a plain paddle. Anvil marks from the impact of the paddle were evident in the interior of vessels. It is also possible that the restricted and unrestricted vessels were scraped and smoothed to ensure an even exterior surface as wipe marks are visible. It is likely that pedestal bowls were also smoothed, especially on the interior of the bowl that is the most visible. At this stage, appliqués such as handles, were applied though there are very few vessels with handles in the overall assemblage. Appliqué is also the weakest part of the vessel and tend to break at this point. Further drying may take place after the secondary forming stage. Fig. 6.53a-b is a small restricted rim vessel, with a downwards curving carination and a pierced lug handle with incised diagonal lines. This vessel is unique and no broken lugs have been found in the overall assemblage.



Fig. 6.53a-b Restricted rim vessel with a pierced lug handle. Image scale = 0-5 cm (IV-1998-P-41521; image: Y. Balbaligo)

Pores and voids in the fabric give information about quality of clay, clay manipulation, evidence of paddling, drying and firing. Pores are fine interstices formed by the packing of materials in the body while voids are hollow spaces indicating specific forming operations, inadequate kneading of clay, joining process or organic pseudomorphs (Rye 1981: 62). Some sherds are more porous than others dependent on size, shape, grading and packing of inclusions, the composition of the paste and treatment during manufacture (*cf.* Rice 1987: 351). 'Type 4: Grey Cord Marked' is porous and shows clear voids recognisable without magnification as a consequence of the clay contracting during drying or firing (see fig. 6.61a-b below). As the ceramic body is fine clay apart from the quartz sand temper, the silt grains are close together and do not interlock, meaning there is pore space between inclusions. The majority of the samples show parallel voids which are fabric following (i.e. strongly aligned to margins of samples) and are all between (inter) aggregates. The voids in Type 4 are straight and maintain the same direction throughout their length. The direction of orientation might also be the result of the impact from paddle and anvil forming which can be seen in microstructure. The application of physical force by paddle inducing compressive stresses that result in the alignment of the inclusions, matrix and voids in specific direction (Quinn 2013: 176). Rice pseudomorphs are also present in Fabric 9 indicating firing temperature (see below).

6.14.5 Surface modification

The surface modification stage (5) changes the surface texture and enhances the visual attributes of the vessel. In ceramic studies, this stage is where there is the most obvious variation has been observed and used as a basis for analysis. In this study, 'Paddle Impressed' and 'Tool Decorated' have been used as categories to define types but goes beyond the aesthetic characteristics as a basis for analysis. Surface modification can be divided into two further stages: surface decoration and surface finish.

There are two types of paddle impressed vessels: carved and bound paddle. While the paddle impressions give an aesthetic finish to the vessel they are also a product of the impact of the paddle against the leather hard clay. With these vessels, variations are

found in the fabric and finish which determine colour, but also in the actual wooden paddle tool which are either carved with different geometric shapes or bound with different sized and shaped cord which produce different impressions and are used to create subtypes for this category (see Types 5 and 6 above for paddle variations).

Incised and impressed pottery shows the most common decorative method. 'Incised' denotes that a narrow tool was applied and drawn continuously across the clay leaving a design. The action from 'combing' is similar to incising in that a compound tool is drawn across the clay. 'Impressed' or 'stamped' denotes that a tool was pressed into the clay leaving a negative impression and then removed. 'Punctates' refer to small, sometimes circular 'holes' impressed into the clay. The Ille ceramics were decorated when the vessel was leather hard as can be seen on the surfaces as the incisions and impressions are clean cut, as opposed to 'thrown up' edges performed on plastic clay or a 'scratched' effect from very dry or fired clay (*cf.* Rye 1981: 67). Type 7 has simple impressions on the rim made with a single fingernail or varying sizes of flat sticks. More complex designs are found on Types 1, 2, 8, 10 and 'Decorated No Types' which show a mixture of incised and impressed curved and linear geometric shapes and punctates which would have been made with a simple thin and pointed stick using the artistic skill of the potter. Precision of lines and puncture marks also varied. Relatedness in the designs could suggest similarity to, or knowledge of, other learning traditions.

Tools used for impressing and stamping include shells and other unidentifiable material. Fig. 6.54a-b show two types of shell used to impress the rim of restricted vessels. The shells impressions are most similar to the bivalve *Anadara* sp. shell which creates thin zigzag patterns. *Anadara* spp. shells have been excavated at Ille Cave (ASP 2005-2006; Paz and Ronquillo 2004) and were a common impressing tool in Mainland Southeast Asia. Black incised ware with *Anadara* sp. shell impressions have been found in parts of Thailand, Cambodia and Vietnam (Rispoli 1992: 129-132). Figs. 6.54c-d show restricted rims with impressions on the top of the rim. The tools used to make the impressions are unidentifiable. The tools may have been fashioned from organic materials or may be impressions from fabric or fibres.



Fig. 6.54 Stamped pottery. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.54a Shell impressed, impressions similar to *Anadara* sp. (IV-1998-P-21862)

Fig. 6.54b Shell impressed, impressions similar to *Anadara* sp. (IV-1998-P-30646)

Fig. 6.54c Restricted rims with unidentifiable tool impression (IV-1998-P-21914)

Fig. 6.54d Restricted rims with unidentifiable tool impression (IV-1998-P-43276)

'Type 1: Red-Slipped Decorated' contains the 'c stamp', the most distinctive recurring motif in the studied Ille assemblage, which occurs on red-slipped vessels. The impression was made with the circular tip of a reed or small bamboo, possibly *Dinochloa* sp. a thin walled hollow bamboo species found in the Philippines (H. Khaufclair pers. comm. 2012). A small section had been cut from the tool to form a 'c' shape. Full circle and semi-circular stamped pottery occur in Southeast Asia (see Chapter 2). However, the Ille c stamp is clearly not a closed circle or even a semi-circle. If the circumference of a full circle stamp is 360° or 100% and the impressed portion of a semi-circle is 180° or 50% of a circle, the portion of the circle stamp which is impressed on an Ille c stamped sherd varies between 270° to 306° or 75% to 85% of a circle (schematically represented in fig. 6.55). Furthermore, no semi-circles or closed circle stamps have been found on any of the Ille ceramics studied here. It must be expressed explicitly and strongly that these actions, movements and gestures are a

technique not just decoration. There is a clear deliberate technological modification to the stamping tool where a small fragment is removed from the circular implement. The action of using a circular stamp could initially have been imitated from other circular stamped impressed pottery in the region but then consciously modified whereby overtime the action becomes embedded to represent a community of practice at Ille.

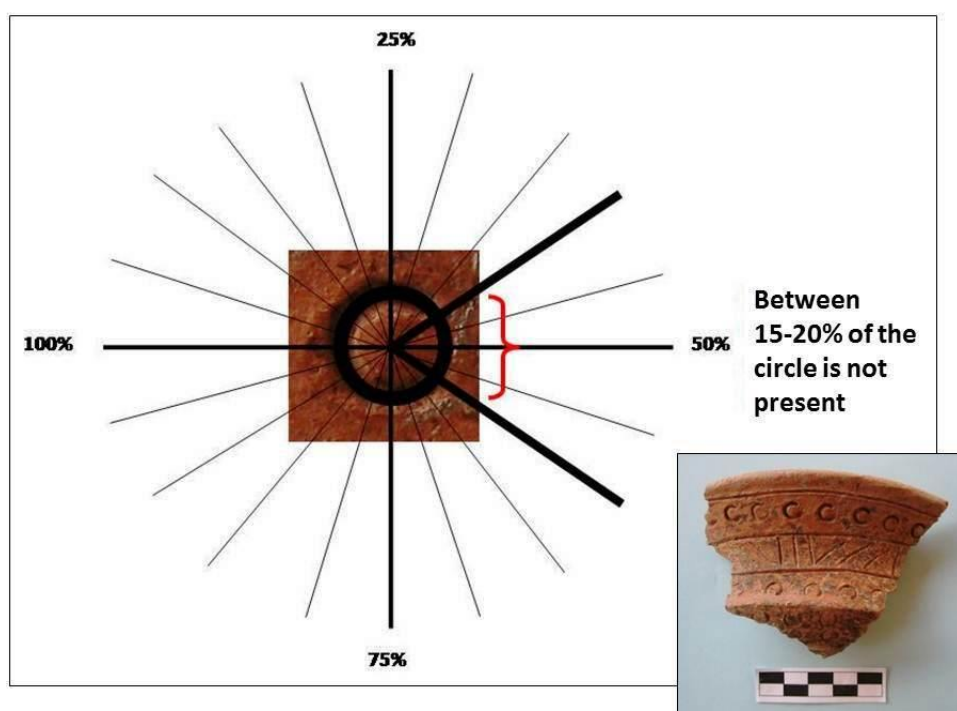


Fig. 6.55 Schematic representation of how the c stamp is not a circle or semi-circle stamp. 15-20% of the circle is deliberately missing. C stamp example taken from figure right inset (IV-1998-P-13943; see also fig. 6.1a for discussion of Red Ware, image: Y. Balbaligo)

This may come from a distinct learnt tradition or as a local modification to a regionally occurring motif. The c stamp occurs with incised and impressed decorations such as horizon bands, punctates, 'leaf' shapes, but never on paddle impressed vessels. There are four variations in the directions (see discussion above), size of the implement and thus motif. The most commonly occurring c stamp impression measure 6-8 mm across though Subtype 1v shows the largest c stamped impression at >10 mm (fig. 6.56a). While most impressions appear regularly and orderly, some stamps look like they were impressed hastily and irregularly (fig. 6.56b).



Fig. 6.56 Variations in Type 1, c stamp impressions. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.56a Subtype 1v, large and rounded foot rim with large c stamped impression at >10 mm, no infilling visible (IV-1998-P-37150, compare with fig. 6.3e showing variations in foot rim forms)

Fig. 6.56b Subtype 1viii, Carination, with crudely and irregularly impressed consecutive facing c stamps. Remnants of white calcium carbonate infilling (IV-1998-P-43103)

Incised and impressed decorated pottery can also occur with infilling and paint (see figs. 6.57a-b and 6.57c-d). However, this is not a widespread practice and few ceramic types with this modification are found in the sample. In terms of surface finish, Type 1 is the only type that has a slip. Paints and slips differ in that paints are liquids composed of water soluble ground pigments (hematite) and slips are composed of liquids containing fine clay minerals held in suspension applied before firing to form a non-vitreous coating on a pottery vessel (Rice 1987: 149; Vincent 2003c: 51). With Type 1, the slurry is made from the same clay as the paste as it contains the same fine quartz grains, iron concretions and opaque grains as the clay body. Water is added to raw clay and mixed and likely wiped on the surface as wipe marks which may correspond with the direction of wiping are visible when the clay is leather hard prior to firing. The slip appears as a separate distinguishable layer on the edge of the sample as seen in thin section (figs. 6.2a-b above).

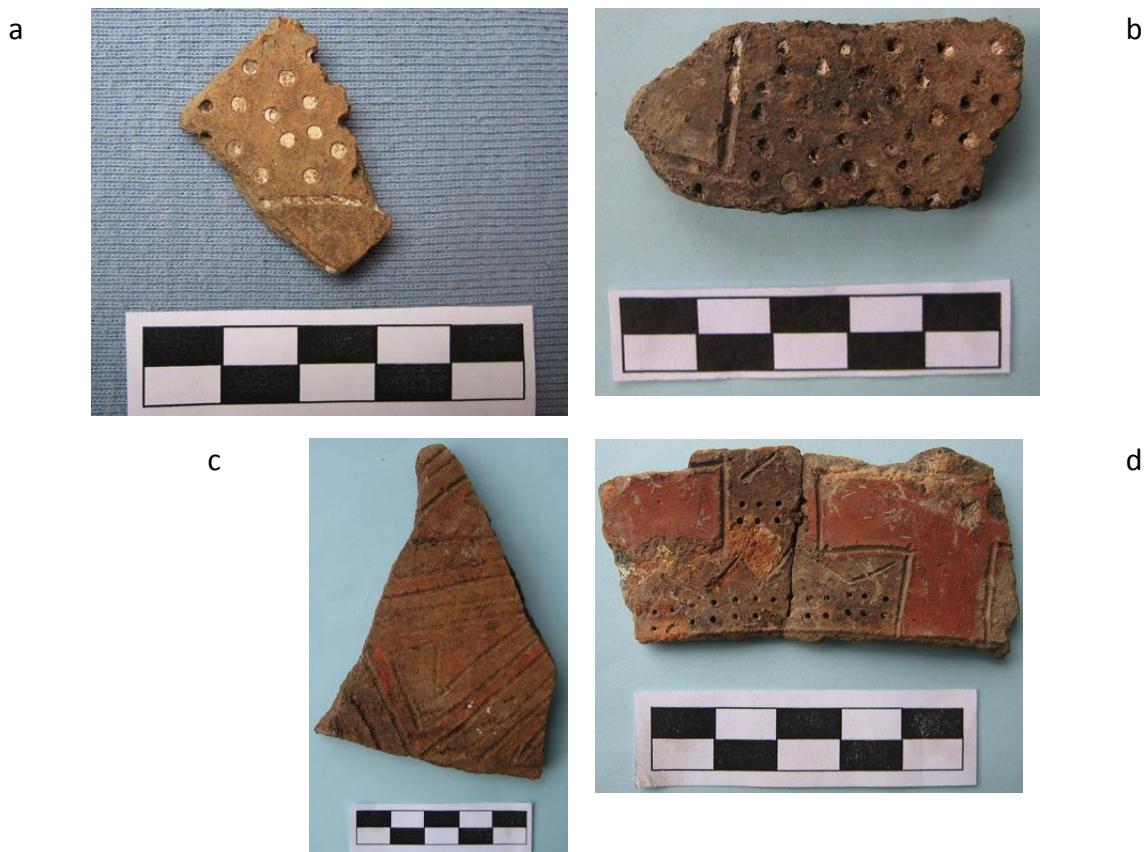


Fig. 6.57 Infilled and painted sherds. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.57a Type 1, remnants of white calcium carbonate infilling (IV-1998-P-43494)

Fig. 6.57b Type 10, remnants of white calcium carbonate infilling (IV-1998-P-21606)

Fig. 6.57c-d Type 11 painted sherds (IV-1998-P-14765, IV-1998-P-21917a+21917)

The exterior of this Type 1 is smoothed with a matte finish and the interior of the bowl portion is highly polished with a uniform lustre. It is possible that more care or time was taken with the interior surfaces because it is the part that is most visible (figs. 6.58a-b). Some foot rings also have smoothed and polished surfaces. However, some foot rims are crude and uneven, rough to the touch without any smoothing or polishing (figs. 6.58c-d). Other vessels are also polished, in particular the pedestal bowls are highly polished with a lustre on the surface (see fig 6.32d).



Fig. 6.58 Examples of surface finishing, Type 1. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.58a-b Exterior and interior of subtype 1vi, mouth rim, highly polished with smooth interior (IV-1998-P-41822, compare with fig. 6.5 showing examples of other smooth mouth rims)

Fig. 6.58c-d Exterior and interior of subtype 1ii, foot rim, rough exterior and interior (IV-1998-P-18814)

6.14.6 Firing

The firing stage (6) can only take place once the vessels are completely dry. A variety of decision making processes would be involved for successful firing of the vessels. This would include an understanding of how and where to place the vessels within the fire (separated or mixed in with fuels and spacing); the correct fuel, adding of fuel during firing and insulation material; control of temperature and firing atmosphere as well as drafts; and rate and duration of firing and cooling. Although no evidence of firing site of any kind has been found, this section discusses what firing information is measurable from the Ille earthenware sample.

Earthenware vessels by their nature are low-fired wares. It is thought that the pottery in the region was fired in an open air bonfire at a low temperature (Fox 1970). The archaeological literature on earthenware firing temperatures varies from 500 °C to 1200 °C both between and within firings (Rice 1987: 82; Rye 1981: 96; Shepard 1985: 29). Gosselain (1992: 245) compiles a range of fuels, firing arrangements and their respective firing temperatures. Gosselain (1992: 256) states that temperatures range from 450 °C to 950 °C with three quarters lying between 600 °C and 800 °C. Furthermore, temperatures can also vary over parts of a single vessel. Gosselain (1992: 576) demonstrates how the Bafia of Cameroon, gain some control over the temperature thresholds by directly removing the vessels in relation to heating rate showing technological control and variation during the production process.

Petrographically, it is possible to estimate equivalent firing temperature by observing thermally induced changes in the clay matrix and with specific mineral inclusions (Quinn 2013: 190-1). Clay matrices lose birefringence between 800-850 °C, therefore, samples with optically active clay matrices are fired at temperatures less than 800 °C (Quinn 2013: 191). All Ille fabrics studied were optically active, therefore, they were all fired below 800 °C. Optical activity was also more easily observed in oxidised ceramics. This can be seen in Fabric 1 (Type 1) where the fabric was highly optical active. Furthermore, this fabric contains serpentinite which undergoes colour changes at c.600 °C. Therefore, it was likely that Type 1 was fired up to a temperature of 600 °C (*cf.* Quinn 2013: 194), as the serpentinite was not altered, and not over 800 °C. Micas may be altered during firing and eventually destroyed at temperatures of c.900-1000 °C. Muscovite loses its colourful birefringence becoming brown due to oxidation and biotite separates along its cleavage planes (*cf.* Quinn 2013: 195). The mica muscovite and biotite in Fabric 7 (Subtype 12i and Subtype 8i) were intact and highly birefringent and, therefore, fired below 900 °C. As there were whole gastropods in some sherds (figs. 6.44a-b above), this is further evidence that the sherds did not reach high temperatures as the gastropods did not calcinate. Rice (1987: 410) states that shell changes to calcite at 500 °C and calcite starts to melt at temperatures above 1000 °C (Quinn 2013: 191).

Rice temper makes the fabric porous, opening up the ceramic during firing. This is evident in cooking pots where the organic material, in particular the presence of silica in the phytoliths found in the double-peaked cells on the lemma of the rice spikelet, helps to reduce thermal shock during repeated reheating of the vessel over cooking fires and keeps the cellular structure of the rice inclusions intact (Tomber *et al.* 2011: 363). With the rice tempered ceramics, rice temper survives in the ceramic body but not on surfaces. Plant material starts to char at 360 °C (Tomber *et al.* 2011: 363). Refiring experiments by McGovern *et al.* (1985) working on the ceramics from Ban Chiang, Thailand, show that organic material begins to burn out around 450 °C and is burnt out completely at 600 °C and above (McGovern *et al.* 1985: 112). It is possible that Fabric 9 (Subtype 6ii and Potential type 19) was fired at a lower temperature than the other types.

No sintering (from c.600 °C) or vitrification (from c.1200 °C; Quinn 2013: 190), which is usually reached in kilns rather than fires, takes place, therefore, supporting the idea that the ceramics were open-air fired. Without information for low temperature decomposition (around 350 °C), a conservative estimate places the firing of the Ille ceramics between 600 °C to 800 °C but not over.

Tite (1999: 188) states that open firings typically reach the maximum temperature in 20-30 minutes and that the maximum temperature is maintained for only a few minutes. During this time, the firing atmosphere in an open firing can change rapidly from reducing to oxidising. Firing atmosphere is governed by the amount of air present to burn the amount of fuel available. An excess of air creates oxidising conditions, while insufficient air allows carbon monoxide to form creating reducing conditions. Ceramic cores give an indication of atmosphere, temperature, and duration of firing.

The firing atmosphere of the Ille ceramics studied shows that there is variation in pyrotechnology. There is variation in firing between types and within types. The red colour of Type 1 is a product of the high iron content, firing temperature and a generally oxidising condition. The majority have thin core margins which are the same colour as the exterior and interior surfaces with a grey core due to the insufficient

penetration of oxygen during firing. The core contains carbon derived from the incomplete burning of organic material in the fabric indicating that iron and organic matter were not oxidised due to insufficient temperature and a short firing duration (Orton *et al.* 1993: 69; Quinn 2013: 202). There are at least four variations of firing atmosphere in Type 1. Fig. 6.59a-b show varying thinness of margins showing incomplete oxidation of the carbon. The core margins are relatively sharp which may suggest that the vessel was cooled rapidly in air (Rye 1981: 116). This is in contrast with fig. 6.59c which has a distinct diffuse core margin grading into the surface colour. Fig. 6.59d does not have a grey core showing it was fired in a complete oxidised atmosphere where the iron compounds in the clay were converted to ferric oxide (Fe_2O_3) once the carbon had been burnt off (Orton *et al.* 1993: 133) and possibly fired for a longer length of time or at a higher temperature. Figs. 6.60a-b (Type 18 and Subtype 6iii) also have grey cores showing the incomplete burning of organic material and a diffuse core margin grading into the surface colour.

The exterior surfaces of Type 4 are varying shades of grey and show mostly grey cores, indicating that they were fired in a majority reducing atmosphere which did not have enough oxygen in it to completely consume the fuel as it burns. However, there is also an element of oxidisation at a later stage of the firing. Some sherds have a core effect with thin margins, for example as seen in fig. 6.61a. However, the firing process varied as not all sherds were fired in the same way. Fig. 6.61b exhibits an unusual characteristic where the core profile has 4 layers visible in the cross-section. The exterior surface and margins may be due to a final phase reduction, while the light grey layer beneath may be oxidised where organic material is present. The layer underneath which is grey and comprises the majority of the core, may be where the oxygen has not penetrated and the interior margin and surface which is light grey may be the final phase of oxidisation. This change in atmosphere can also be seen in thin section where the exterior margin is light grey and the core is dark grey, showing the lighter colour was not a slip (figs. 6.61c-d).



Fig. 6.59 Type 1, core margins indicating atmosphere, temperature, and duration of firing (image: Y. Balbaligo)

Fig. 6.59a Thin core margin showing incomplete oxidation of the carbon (IV-1998-P-35900)

Fig. 6.59b Sharp core margin suggesting vessel was cooled rapidly in air (IV-1998-P-18173)

Fig. 6.59c Diffuse core margin grading into the surface colour (IV-1998-P-38063)

Fig. 6.59d No core, complete oxidised (IV-1998-P-43052)

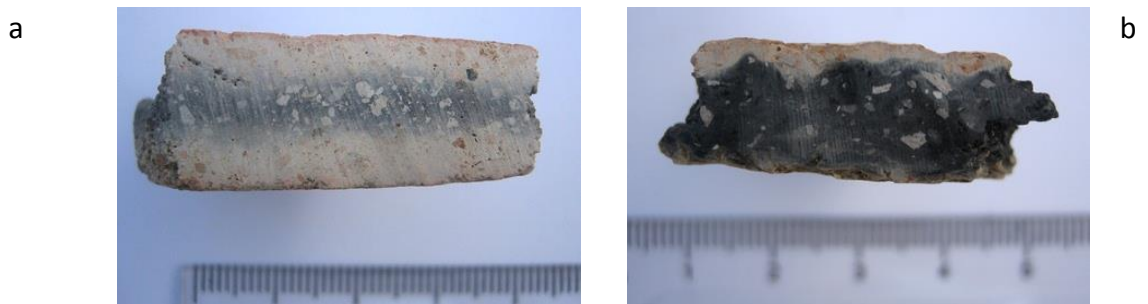


Fig. 6.60 Grey cores showing incomplete burning of organic material and diffuse core margin grading into the surface colour. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.60a Type 18, IV-1998-P-15753

Fig. 6.60b Type 6: Carved Paddle, Subtype 6iii (IV-1998-P-21607)

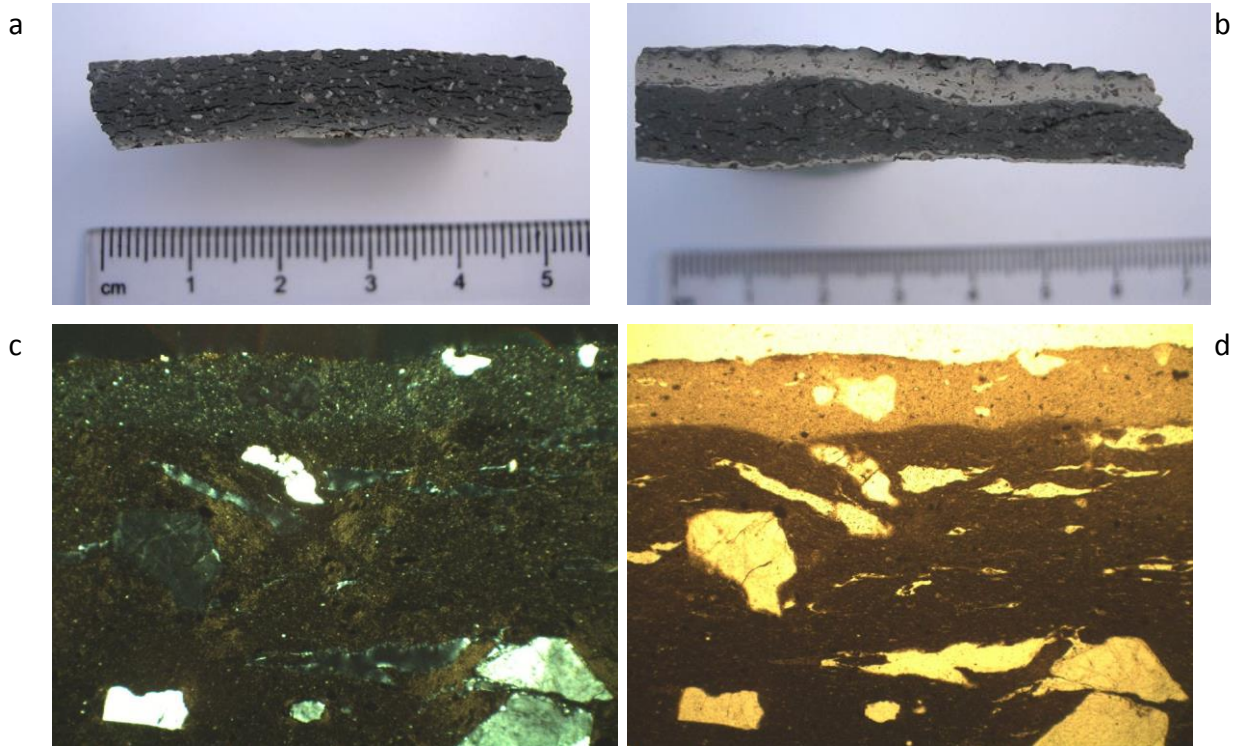


Fig 6.61 Type 4, core margins in hand specimen and photomicrograph (image: Y. Balbaligo)

Fig 6.61a Grey core with thin margin indicating firing in a majority reducing atmosphere (IV-1998-P-15995)

Fig 6.61b Four layer core indicating firing in a reducing atmosphere with oxidised phase and final phase reduction (IV-1998-P-14398)

Fig 6.61c-d Photomicrograph shows colour change in exterior margin reflecting change in oxidation and reduction environment during the firing process. Dark part of top of micrograph is outside of the sherd. XP/PPL. Image width = 2.9 mm. (IV-1998-P-20626, sample 044).

Temperature and firing also effect surface colour. Although iron may be present in small quantities in clay, it has a strong effect on colour depending on its abundance and oxidation state. Iron is oxidised to 'ferric' minerals such as haematite (Fe_2O_3) during firing in an oxidising atmosphere giving the ceramic body an orange red or brown colour. This process takes place above 600 °C once all organic matter has been removed (Quinn 2013: 198-200). Under reducing conditions iron exists as dark 'ferrous' minerals such as magnetite (Fe_3O_4) which contributes to the grey or black colour of reduced ceramics caused by the presence of carbonised organic matter such as with Fabric 10 (Quinn 2013: 200). Any post-firing treatments of the ceramics are at this stage unknown.

6.14.7 The *chaîne opératoire* in relation to types

The fine details of the *chaîne opératoire* discussed above can be specifically applied to the Types and Potential Types to show the response to difference in raw material, motor habits in pottery formation, and overall technological practice. Table 6.12 showed the essential and non-essential production sequence of the earthenware, identifying all the major necessary stages and potential for variation in production. Table 6.14 compares three significant types; 'Type 1: Red-Slipped Decorated', 'Type 4: Grey Cord Marked' and 'Potential Type 19: Rice temper fabric', as these types are prominent in the assemblage, have clear correlating attributes within the type and have clear differences. The table shows the difference between the steps in the process to suggest how difference in *chaîne opératoire* and technological practice can suggest difference in learning traditions and communities of practice which is discussed below.

The differences in Table 6.14 occur in all the non-essential stages, such as temper gathering and preparation and surface modification through decorating the exteriors surfaces. These differences are visually obvious and measurable. Difference in production process and shaping of the vessels are related to the function of the vessel - for example unrestricted presentation bowls verses restricted rim storage vessels. Variation further occurs during the firing process which contributes to the visual appearance of the fabric but also contributes characteristics which are not immediately obvious such as porosity and thermal stress.

Chaîne opératoire	Type 1: Red-Slipped Decorated	Type 4: Grey Cord Marked	Potential Type 19: Rice temper fabric
1. Management of raw materials	Identifying sources of raw materials, clay selection, extraction and transportation		
	Temper selection and procurement		
	Fuel selection and collection, tool selection and collection		
2. Raw material preparation	Processing clay, fuel preparation		
	Preparation grog for temper - reducing, sorting	Gathering and preparing quartz sand for temper – sorting	Procuring and preparing chaff and rice for temper - threshing, dehusking, cutting
	Red-slip preparation		
	Tool preparation - shaping of implements for decoration	Tool preparation - preparation of paddle	Tool preparation - preparation of paddle
3. Paste preparation	Formation of clay body, mixing clay and water, kneading, addition of temper		
4. Production	Shaping - hand fashioned (primary forming), vessel defined (secondary forming)		
	Rim formation, hand fashioning of upper bowl and foot ring, pedestal bowl and foot rings joined	Unknown form - paddle and anvil, drawing up of body	Unknown form - paddle and anvil, drawing up of body
	Drying		
5. Surface modification	Incising, impressing, infilling	Decorated paddle and anvil	Decorated paddle and anvil (and undecorated examples)
	Surface finish – red-slip, polishing, smoothing		
6. Firing	Oxidising environment	Majority reducing environment, later oxidisation	Reducing environment
	Between 600-800 °C	Up to 800 °C	Between 360-450 °C

Table 6.14 Comparative table showing the major stages of production shared between three different ceramic types (*cf.* table 6.12).

Differences occurring in the production sequence are highlighted in grey.

The following section examines the extent to which provenance can be determined to establish whether raw materials were locally sourced and if ceramics were manufactured locally or made elsewhere and brought to the site.

6.15 Provenancing the Ille earthenware fabrics

As shown there is a variety of ceramic types and potential types and at least 10 fabric categories; therefore, it is important to establish which ceramic types and fabrics might be produced locally. This can help to determine whether ceramic learning traditions and communities of practice identified at Ille Cave can be related to the area. In archaeology, provenance studies enable the examination of the movement of artefacts by trade, exchange, ceremonial offerings or group mobility. The extent to which this is possible will be considered with the studied assemblage.

Attempts at provenance determination were made by identifying the major rock and mineral inclusions in the thin sections and comparing this information against geological maps and surveys, firstly of the local area, and then expanding outwards. However, as this area is under-researched, what is known and what can be done is limited. While a general geologic map for the Philippines exists (fig. 6.62), northern Palawan is represented as geological homogenous and lacks detail (fig. 6.63). The lithology comprises schist, phyllite, gneiss, marble and quartzite ranging from greenschist to pyroxenite facies (Bureau of Mines and Geo-sciences 1981) and undifferentiated amphibolite, quartzofeldspathic and mica schist, and phyllites-slate (Mines Geosciences Bureau 2000). While the rocks cited on the geological map occur within a 100 km radius, it is not clear where rock formations occur individually or its distribution in the landscape.

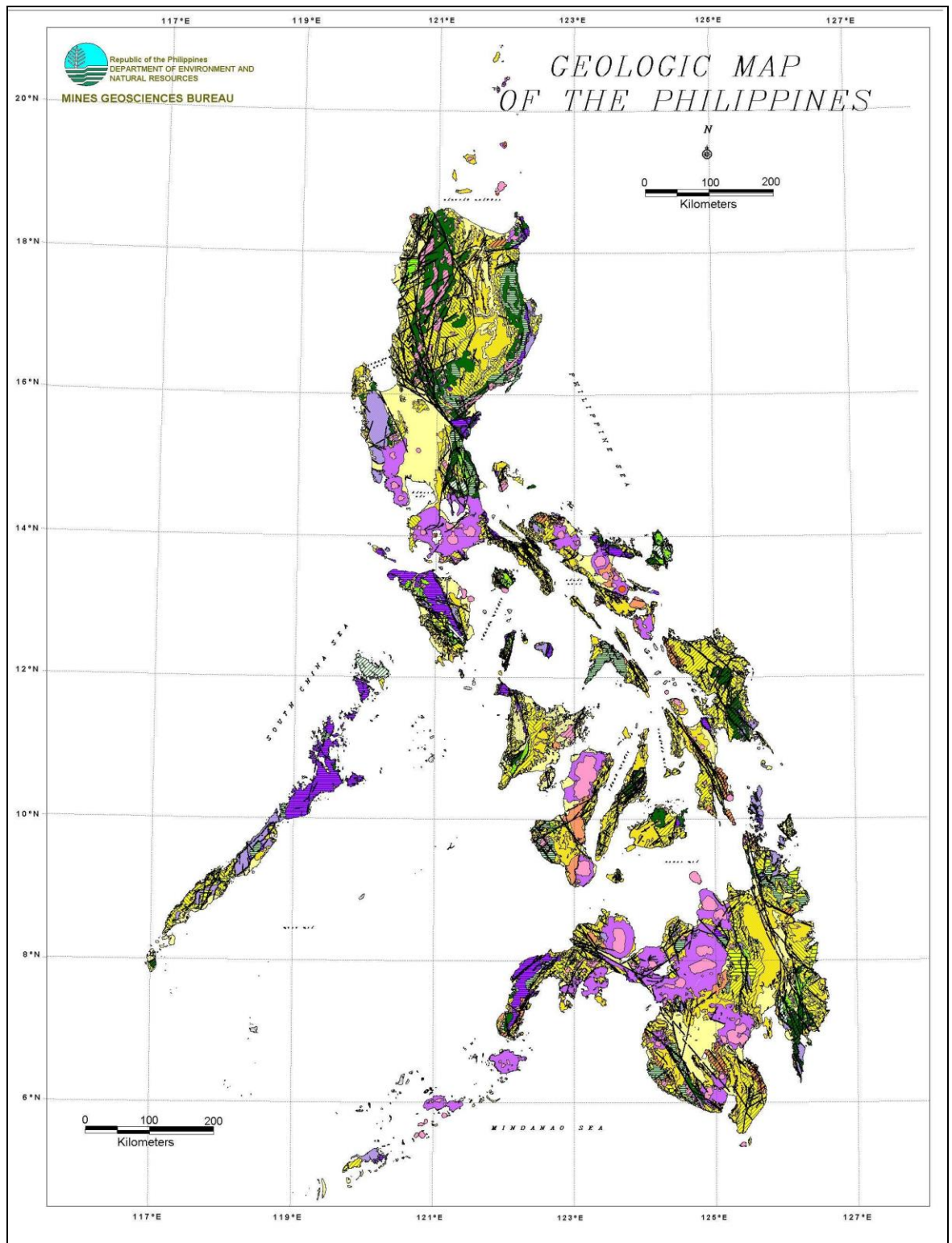


Fig. 6.62 Geological map of the Philippines (image: Mines and Geosciences Bureau 2000)

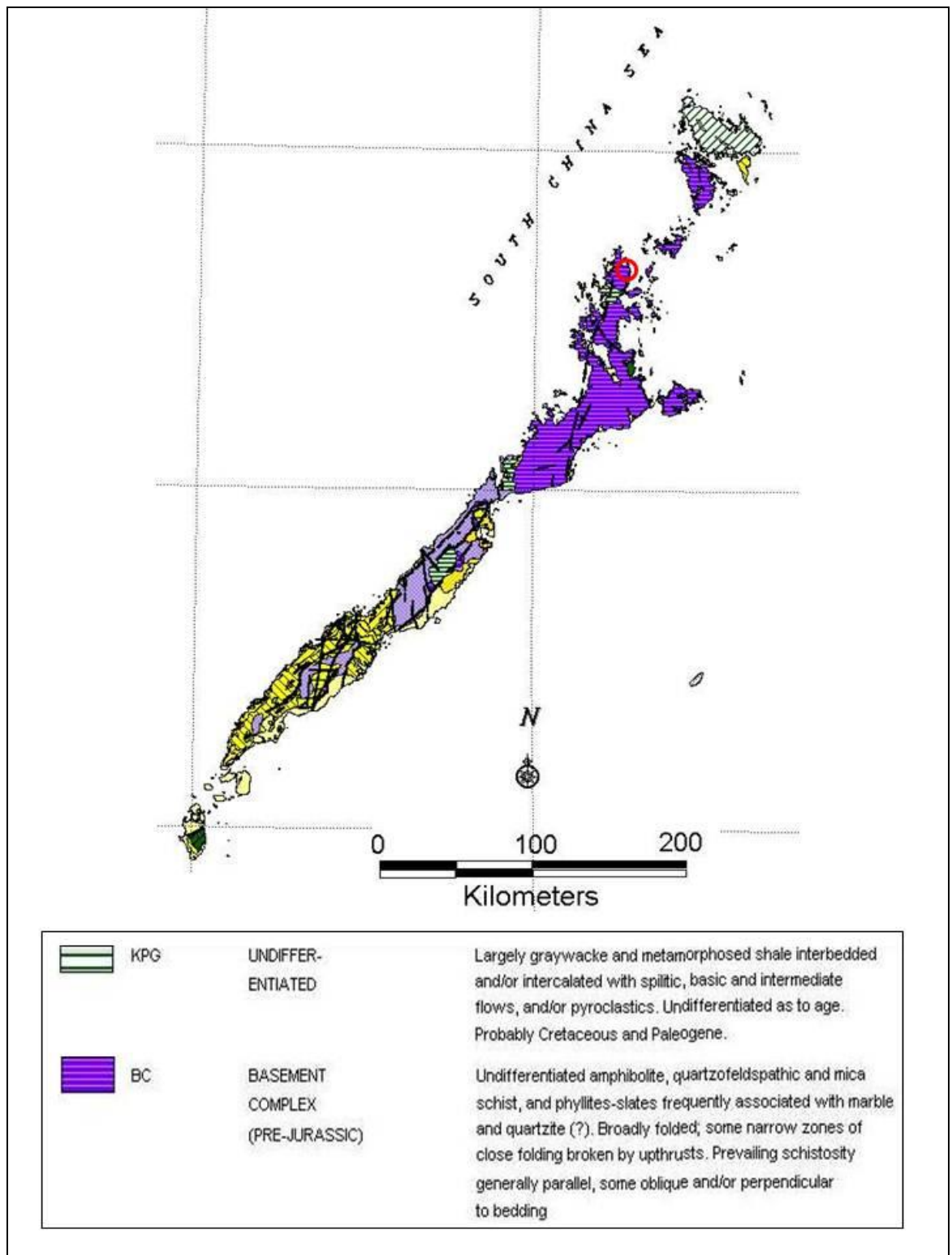


Fig. 6.63 Close up of Palawan Island and legend for northern Palawan. The area of northern Palawan appears homogenous. The area for Ille Cave and the Dewil Valley is circled (image: Mines and Geosciences Bureau 2000)



Fig. 6.64 Flat modern floodplain of the Dewil Valley surrounded by limestone karst outcrops. Members of the University of the Philippines-Archaeological Studies Program and local people from Barangay New Ibajay setting out to survey cave sites in the Dewil Valley (image: Y. Balbaligo)

A survey of northern Palawan was undertaken in 1981 by the Bureau of Mines and Geosciences (later Mines and Geosciences Bureau 2010) and cited by Santiago *et al.* (1999) and SEAICE (1999) for preliminary surveys of the immediate area which were conducted at the start of the research project. Ille Cave, situated in the Dewil Valley, Barangay (village) New Ibajay in El Nido, is part of the Bacuit Formation (Pb). El Nido is largely underlain by variable metamorphosed siltstone-sandstone associated with the sedimentary sequence that includes chert, shale, sandstone, conglomerate and limestone of the middle Jurassic Bacuit Formation. Unconformably overlying these sedimentary rocks are remnant karst towers belonging to the Pabellion Limestone of the upper Eocene age (SEAICE 1999: 13). The Dewil Valley in El Nido is mountainous and interspersed by flat valleys and uplands in the interior and mangrove areas at river deltas (fig. 6.64). The coastal landscape is composed of tidal flats with mangroves, alluvial fringes, and older colluvial-alluvial valleys with Quaternary alluvium raised beaches which are Holocene in age. The islands along nearby Bacuit Bay are rugged karst mountains with pocket beaches. The Ille tower is a remnant of a larger limestone

mountain that had sunk, collapsed and eroded leaving behind a classic limestone tower (Santiago *et al.* 1999: 3).

A preliminary survey of the banks and riverbed of the Dewil River that runs through Barangay New Ibajay revealed mostly sedimentary rocks (Santiago *et al.* 1999). The alluvium deposits consisted of sandstone, siltstone with red oxidised staining and conglomerates (clastic sedimentary rocks which contained rounded pebbles and cementing materials). Metasedimentary rocks and unidentified metamorphic rocks were clasts within the alluvium deposits in the Dewil River. Varieties of sandstone included quartz sandstone, arkose and greywacke. The arkose was mostly feldspar and the greywacke included quartz, feldspar and mica (Santiago *et al.* 1999: 13). The survey by SEAICE (1999: 86) found that alluvial deposits confined within drainage channels were a mix of cobbles, gravels, boulders and sand. The coarser materials were rounded fragments of schist, phyllite and chert apparently derived from the basement metamorphics and other older rocks in the vicinity. There were also thick clayey soils or sedimentary clay from secondary deposits which were hematite rich. Outcrops of grey meta-siltstone, leached, friable mottled, marly siltstone-sandstone were found throughout Barangay New Ibajay with limited exposure along embankments. More consolidated grey to brownish pebbly siltstone-sandstone were found near the Ille tower. Augering was carried out in the southern part of the Ille tower and the type of soil observed was clay soil ranging from clay loam to heavy clay and hematite was found mixed with the soil matrix (SEAICE 1999: 132). The channel of the Dewil River preserves the evidence of a highly dynamic fluvial system. Wandering meanders are confined within the fairly wider active channel, a factor of the relatively high sediment load (SEAICE 1999: 86). No archaeological deposits in exposed sections have been found by the banks of the Dewil River (Paz and Ronquillo 2004: 13).

The underlying geology of the flat landscapes of the Dewil Valley is unknown, and the bedrock has not been exposed (H. Lewis pers. comm. 2012). Furthermore, there are no detailed geomorphological or soil maps of the area. Although the valley has not been fully mapped, there are many potential secondary and primary clay sources within the

watershed. However, it was not possible for the author to collect clay and soil samples within the scope of this research.

Fig. 6.65 and table 6.15 shows the distribution of rock formations from surveys of northern Palawan undertaken by Almasco *et al.* (2000); Bureau of Mines and Geosciences (1981 [Mines Geosciences Bureau 2010]); Zamoras and Matsuoka (2001) and cited by Santiago *et al.* (1999). Other places with significant lithology include the Calamian group of islands, which are composed of uplifted basement chert and limestone, and a shale-sandstone sequence is found on Busanga Island, and the Baheli Isthmus has a siltstone-sandstone-shale pillow lava unit composed of interbedded grey, micaceous feldspathic siltstone, micaceous, marly and feldspathic sandstone and black tuffaceous shale. The sandstone contained graded bedding, fossil trails and flute casts. The following section discusses whether the 10 fabrics established could be of local provenance and, therefore, whether the ceramics were manufactured locally.

6.15.1 Fabric 1: Grog and chert fabric

Of the inclusions in Fabric 1, the grog temper and quartz grains are non-diagnostic in terms of provenance. Chert is the most common inclusion. It is coarse, appearing both sub-angular and sub-rounded with both high and low sphericity. The chert contained few radiolarian microfossils. Iron oxides, veins of hematite and iron staining are present with some showing rectangular shaped iron-rich minerals grown within inclusions in the chert during its diagenetic history. The chert could come from the Bacuit Formation (Pb – see fig. 6.66) where Ille Cave is situated but chert is also found in the Busuanga Island (Jb) part of the Calamian group of islands north of El Nido and further afield to the south of El Nido, the Minilog Island (PTm) and the Liminangcong Coast (TI), and in central and southern Palawan (Mines Geosciences Bureau 2010). Altered basalt and serpentinite are other inclusions found in Fabric 1 but are less abundant. Basalt can be found near Manguao Lake (Qmv) south of El Nido but is also abundant in southern Palawan. Serpentinite is found as part of the Barton Metamorphics (Pbm) and near the Baheli Isthmus and Punta Diablo in central Palawan and in more abundance in southern Palawan (Zamoras and Matsuoka 2001).



Fig. 6.65 Map of the Northern Palawan Block showing rock distributions. Significant place names are marked in black, places mentioned by Santiago *et al.* (1999 after Bureau of Mines and Geo-sciences 1981) are marked in white and rock formations amalgamated from Almasco *et al.* 2000; Mines Geosciences Bureau 2010; and Zamoras and Matsuoka 2001 are marked in yellow – see table 6.15 for key (image: Google Earth 2013, modified by Y. Balbaligo).

Period	Key	Lithology	Description / distribution
HOLOCENE	Qu	Alluvium	Quaternary alluvium raised beaches
PLEISTOCENE	Qmv	Manguao Basalt	Basalt, subordinate shale, siltstone, conglomerate and pyroclastic rocks (Lake Manguao)
MIOCENE OLIGOCENE	OMp	St. Paul's Limestone	Limestone
	Op	Piedras Andesite	Andesite (Punta Diablo)
EOCENE	Eki	Kapoas Intrusive	Kapoas Diorite (Kapoas Peninsula)
	Ep	Pabellion Limestone	Dark grey to black, medium to thickly bedded, sandy, fossiliferous and crystalline
	Ebu	Mt. Beaufort Ultramafics	Harzburgite with irregular patches and lenses of dunites
CRETACEOUS	KEbp	Boayan Formation	Sandstone, mudstone
	Kg	Guinlo Formation	Quartzose sandstone, mudstone and conglomerates (Guinlo Point)
JURASSIC	Jb	Busuanga Chert	Radiolarian chert
	Ji	Imorigue Limestone	Limestone
	Jk	Kapoas Granite	Kapoas granite has two varieties; clear normal biotite granite and a variety with dark patches or schlieren. Both are pale grey containing abundant quartz (Cleopatra's Needle extending northwards)
TRIASSIC	Tl	Liminangcong Formation	Hematite bearing chert, radiolarite, intercalated with black slate and reddish, bedded tuff (Liminangcong Coast)
	Tc	Coron Formation	Dominantly limestone, subordinate shale and sandstone
PERMIAN	PTm	Minilog Limestone	Wackestone, micrite and chert
	Pb	Bacuit Formation	Chert bearing shales and sandstone, metasediments, conglomerates, limestone altered tuff, calcareous, slate
	Pbm	Barton Metamorphics	Serpentinite and gabbro. Ultramafic and mafic rocks composed of serpentinised dunite and peridotite. Also phyllites, schists, slate, greywacke, sandstone and shale with limestone lenses (from Baheli Isthmus and Punta Diablo).
CARBONIFEROUS	Ccp	Concepcion Phyllite	Phyllite mudstone, siltstone, sandstone and met-sediment, conglomerate mudstone.
	Ccs	Caramay Schist	Muscovite, schist, quartz mica schist and graphite schist, mica free quartzite.

Table 6.15 Summary of the stratigraphy of the Northern Palawan Block showing geological periods and lithology. After Almasco *et al.* 2000; Mines Geosciences Bureau 2010; Santiago *et al.* 1999; Zamoras and Matsuoka 2001.

The chert and quartz inclusions found in Fabric 1 are likely to be naturally-occurring clasts within a sedimentary clay source and not temper. This can be determined through grain shape, size range and frequency (Rice 1987: 409). In Fabric 1, the grain shapes of the chert and quartz are rounded, sub-rounded or sub-angular but never angular, indicating that the roundness of the inclusion was likely formed by the action of a highly dynamic fluvial system. The coarse size of the chert and quartz (0.025-0.1 cm) is consistent across the samples and the amount ranges between 7-20% whereas Rice (1987: 410) states that deliberate temper is usually present in relatively large quantities c.20-30%. Furthermore, chert can be identified in the local area as part of the Bacuit Formation (Pb). It is most likely that the basalt and serpentinite are naturally occurring rather than temper. The basalt and serpentinite are more rarely occurring than the chert and quartz and are also coarse grained with similar sizes as the chert and are bimodally distributed. There is compositional similarity between the coarse, medium and fine grains. Therefore, it is likely that the chert, quartz, basalt and serpentinite are naturally occurring inclusions.

'Type 1: Red-Slipped Decorated' is made from Fabric 1 has correlating attributes of surface decoration and treatment (red-slip) and form. Red-slipped pedestal bowls with similar c stamped impressions are also found in southern Palawan in Linaminan, Isumbo (see Chapters 3 and 7). However, it is unknown whether the Linaminan ceramics are the same fabric as Fabric 1 from Ille. This ceramic type might be made and deposited locally or a similar type may be manufactured in different parts of island and traded/exchanged.

Although the survey by the Bureau of Mines and Geo-sciences (1981, [Mines and Geosciences Bureau 2010]) and other studies cover a wide region, the areas are not fully mapped. Geological information has not yet identified serpentinite in northern Palawan. It is possible, however, that occurrences of serpentinite were present but have not been mapped or reported. Serpentinite comes from the alteration of basalts and as basalt are present in the fabric and in the northern Palawan peninsula, therefore, it is possible that some of the basalt is serpentinitised or chloritised. Due to the disparate distribution of the dominant inclusions of chert, basalt and serpentinite and the absence of good topological maps to rivers and drainage basins, it is not

possible to isolate the raw materials to a precise area or assess where and whether the parent rocks may have ended up in the alluvium of a drainage area. However, as the rock types occur within c.50 km radius south of Ille Cave, the geological evidence suggests it is possible that the raw materials for Fabric 1 were located on the northern Palawan peninsula and it is not impossible that eroded clasts from these rock types on El Nido could occur in local alluvium. Ille Cave is part of the Bacuit Formation which is a good candidate for a local source of chert. Fabric 1 is the most commonly occurring fabric in the studied collection from Ille Cave and the ceramics made of this fabric are the most commonly occurring ceramic type (Type 1) and the most stylistically distinctive. The criteria of abundance premise suggests that ceramics strongly represented at a site are likely to be of local manufacture, thus a greater proportion of locally produced pottery is consumed locally rather than disseminated to other sites (Bishop *et al.* 1982: 301; Quinn 2013: 119). Without raw material sampling, but based on the available evidence, the raw materials used in the fabric could have been procured locally in the El Nido area, and the ceramics may, therefore, have been produced locally.



Fig. 6.66 Map of the Northern Palawan Block showing rock distributions of rock types (chert, basalt and serpentinite) found in Fabric 1 (image: Google Earth 2013, modified by Y. Balbaligo)

6.15.2 Fabric 2: Grog, quartz and chert

Fabric 2 contains grog temper which is not diagnostic in terms of provenance and contains little lithology to help with provenance. Although it is a 'loner' sample, it was not the only one in the studied assemblage but represents a small proportion of the sample (Quinn 2013: 79). Fabric 2 is macroscopically similar to Fabric 1 in that both are fired Red Ware. In thin section, the sample contains commonly occurring quartz inclusions and rare chert. The chert appears similar to the chert in Fabric 1 with the same characteristics of iron staining, however, no radiolaria are present in the thin section. As discussed above, it is likely that the chert and quartz inclusions were naturally occurring clasts within a local sedimentary clay source and not crushed as temper. The grain shapes of the quartz and chert are sub-rounded or sub-angular but never angular, suggesting they are alluvial. The coarse size of the quartz and chert (0.025-0.1 cm) is consistent across the samples and constitutes 20% of the sample. They are bimodally distributed and there is compositional similarity between the coarse, medium and fine grains. Therefore, it is likely that the quartz and chert are naturally occurring inclusions. Fabrics 1 and 2 are similar and may be part of the same fabric group because they both have the same iron-rich paste and dominant coarse fraction such as quartz, chert and grog. However, while the composition is similar the proportions differ as quartz grains are larger and prominent in Fabric 2 while chert is prominent in Fabric 1.

Fabric 2 has few rock inclusions to help with provenance, however, there are a few inclusions of mudstone. Although mudstones are found as part of the Boayan Formation (KEbp) and Guinlo Formation (Kg) to the south of El Nido and as part of Concepcion Phyllite (Ccp) in central Palawan, as the region has not been fully surveyed, it is possible that there are occurrences of mudstone closer to the Dewil Valley but that these have not been mapped or reported. With this fabric, it has not been possible to locate or link drainage channels for the chert and the mudstone. However, due to the macroscopic and microscopic similarities with Fabric 1 it is possible that Fabric 2 may have a similar local origin to Fabric 1 in terms of material procurement and local production.

6.15.3 Fabric 3: Sandstone and altered igneous fabric

Fabric 3 contains frequent chert and quartz inclusions. The chert appears similar to the chert in Fabrics 1 and 2 with the same characteristics of iron staining and radiolaria and has a similar degree of rounding and coarse size range. There is also compositional similarity between the coarse, medium and fine grains. It is possible that Fabric 3 shares the same chert source as Fabrics 1 and 2 (see above), although there is less chert in Fabric 3. As with Fabrics 1 and 2, it is likely that the chert and quartz components were naturally occurring clasts within a sedimentary clay source and not added as temper.

There are a few sandstone inclusions with arkose showing epidote and interlocking quartz with diagnostic grey components of weathered feldspar. Sandstone including arkose was found during the survey by the bank and riverbed of the Dewil River that runs through Barangay New Ibajay where Ille Cave is situated (Santiago *et al.* 1999) and is part of the Bacuit Formation (Pb). Other varieties of sandstone are found in the Coron Formation (Tc), the Calamian group of islands north of El Nido and Boayan Formation (KEbp), Guinlo Formation (Kg), Concepcion Phyllite (Ccp) and Barton Metamorphics (Pbm) south of El Nido. A few inclusions of altered igneous rock, specifically weathered volcanic rock fragments with remains of feldspar phenocrysts (fine grained igneous rock) are present in thin section, however, it is not apparent where these might originate from as no fine grained igneous rock have been reported in the geological surveys.

Macroscopically, ceramics in this fabric fire to a light-dark brown colour. Other fabrics also fire to a light-dark brown colour and vessels of this fired brown colour are the most abundant in the overall Ille assemblage. Due to the occurrences of chert and sandstone in the lithology of the Bacuit Formation (Pb) and its identification by the project team by the bank and riverbed of the Dewil River and the criteria of abundance premise, it is most likely that this clay was procured close to Ille Cave or in the Dewil Valley and possibly of local manufacture.

6.15.4 Fabric 4: Grog and quartz Fabric

While grog temper and quartz inclusions are non-diagnostic in terms of provenance, there are very few diagnostic inclusions in Fabric 4 and, therefore, this fabric is hard to provenance. There are very few to rare chert and heavily altered rock fragments, which may be sandstone and can be related to the lithology of the Bacuit Formation (Pb). Rare examples of granite are also present in thin section and can be found in the Kapoas Peninsular southwest of El Nido (Zamoras and Matsuoka 2001). Kapoas Granite (Jk) contains biotite and quartz which are present in the fine fraction. However, other occurrences of granite in the El Nido area might not have been mapped. With this fabric, it has not been possible to locate or link drainage channels for the chert, sandstone or granite.

The rare chert inclusions tie this fabric to other fabrics with chert and to the local area. As with the other fabrics, it is likely that the quartz inclusions along with the chert due to their size, shape and frequency were naturally occurring clasts within a sedimentary clay source and not added as temper. Due to the occurrences of sandstone and chert, and the microscopic and macroscopic similarities with Fabric 3, Fabric 4 is likely to be sourced locally and possibly produced locally to the Dewil Valley area.

6.15.5 Fabric 5: Chert and quartzite fabric

This fabric contains common quartz, quartzite and rare grog temper which are non-diagnostic in terms of provenance and apart from the chert inclusions, there are few diagnostic inclusions in Fabric 5 and, therefore, it is hard to provenance. Chert has been found in Fabrics 1 to 6 and can be found in the Bacuit Formation (Pb) as well as other locations in northern Palawan. However, there may be other sources for this chert. Although Fabrics 1 and 3 contain few radiolaria, the chert in Fabric 5 is radiolarian chert with clear and abundant microfossils of radiolaria. A study by Zamoras and Matsuoka (2001) found that radiolaria were abundant in the chert from the Calamians island group, specifically Busuanga Island (Busuanga Chert Jb) and in the Liminangcong Formation (TI) southwest of El Nido. Therefore, there is a possibility the chert might be from these locations rather than from the Bacuit Formation (Pb). However, the presence of abundant radiolaria is not indicative of provenance and it

has not been possible to trace the drainage channels for this chert. As with Fabrics 1 to 4, it is likely that the coarse inclusions in this fabric were natural occurring clasts within a sedimentary clay source rather than added temper due to the roundness sphericity, size and frequency. Due to the presence of chert and the microscopic and macroscopic similarities to Fabrics 3 and 4, it is not unlikely that the fabric was sourced and produced locally to El Nido, if not the Dewil Valley.

6.15.6 Fabric 6: Chert and volcanic rock fabric

Fabric 6 contains grog temper which is non-diagnostic in terms of provenance but has the widest range of rock inclusions including commonly occurring chert, granite and serpentinite, and very few occurrences of andesite. Unidentified volcanic rock fragments are also present but cannot contribute towards provenancing. As with Fabrics 1 to 5, chert can be found in the Bacuit Formation (Pb), Busuanga Islands (Jb), Liminangcong Formation (Tl) and Minilog Limestone (PTm) – all northern Palawan; occurrences of granite have been reported in the Kapoas Peninsula (Kapoas Granite – Jk), southwest of El Nido; serpentinite is found as part of the Barton Metamorphics (Pbm) and near the Baheli Isthmus and Punta Diablo in central Palawan; and andesite has been report at Piedras Point (Piedras Andesite – Op) central Palawan. As these rock inclusions are not all reported in the same area, they seem to be distributed widely across northern Palawan. However, it has not been possible to locate or link drainage channels connecting the chert granite, serpentinite and andesite.

It is likely that the coarse inclusions were naturally occurring clasts within a sedimentary clay source and not added as temper, due to the roundness sphericity, size and frequency of the inclusions. It is possible that the chert ties this fabric to Fabrics 1 to 5, and there are enough similar rock inclusions to tie it to the local area. But the presence of andesite may distinguish it as non-local. While it is not impossible that the clay was sourced locally to El Nido, the range of rock inclusions also suggest that the raw materials could have been collected from a different source to the other fabrics.

6.15.7 Fabric 7: Mica and quartz fabric

Fabric 7 is a departure from Fabrics 1 to 6. It is macroscopically different in fired colour and in composition. In thin section, this fabric has quartz and very few rock fragments (some with foliated metamorphic textures) which are heavily altered and remain unidentified. However, the thin sections contain the only example in the petrographic samples of commonly occurring immature coarse biotite and muscovite mica. The mica occurs in association with polycrystalline quartz, suggesting the presence of schist. According to the geological surveys, quartz mica schist occurs in the Caramay Schist (Css), central Palawan. Although mica has not been reported in surveys of the immediate area, the presence of mica in the thin section is encouraging as the Dewil Valley is located on mica schist (Mines Geosciences Bureau 2000) which would suggest that the fabric could be local. In fine fraction, shale and phyllite are also present which occur in the Dewil Valley making it most likely that the clay source is local but from a different clay source and/or drainage basin than Fabrics 1 to 6 as it does not share the same alluvial sediments especially the chert. Or it could have come from the same basin if this was mined over schist weathering deposits as opposed to being collected from the alluvium. However, it has not been possible to identify or link drainage channels containing mica schist.

Archaeologically, the form and decorative styles of the ceramics studied from Ille Cave and Corong Corong Rockshelter (southwest of Ille Cave) link their production to the Dewil Valley area. Therefore, it is likely that the procurement of raw materials and the ceramic production was local to the Dewil Valley, if not wider El Nido.

6.15.8 Fabric 8: Grog temper fabric

Fabric 8 is extremely difficult to provenance based solely on its composition as the clay is very fine and the samples include grog temper which is non-diagnostic in terms of provenance. The thin section does not contain the coarse, medium or fine sand sized mineral or rock inclusions, found in other the fabrics, such as quartz and chert. It does, however, contain rare occurrences of highly oxidised serpentinite. Serpentinite is found as part of the Barton Metamorphics (Pbm) in central Palawan and in more abundance in southern Palawan. Based upon the present geological information, it

suggests that this fabric may not be local as serpentinite is not reported in the northern Palawan area (*cf.* Fabric 1). It is possible, however, that occurrences of serpentinite were present in northern Palawan but have not been mapped or reported. The samples in hand specimen are too few in number with little comparable attributes or diagnostic features to tie it to ceramic producing area. But it is clear that the clay comes from a different source than Fabrics 1 to 7 and 9. There may be some similarities with Fabric 10 and this is discussed below. Based on the evidence, it is impossible to pin point the locality of this fabric based on the current samples.

6.15.9 Fabric 9: Rice temper fabric

Fabric 9 is also difficult to provenance based solely on its composition. The paste was prepared by the addition of rice temper which is non-diagnostic in terms of provenance. The fabric has very fine clay without mineral and rock inclusions except rare medium sand sized quartz and frequent fine sand sized quartz inclusions which are non-diagnostic in terms of provenance. It is impossible to identify the locality of this fabric based on its petrographic composition alone and the available geological information. Furthermore, the samples in hand specimen are too few in number with little comparable attributes to tie it to a ceramic producing area.

6.15.10 Fabric 10: Coarse quartz temper fabric

Fabric 10 is difficult to provenance based solely on its composition as the clay is very fine. The paste has been prepared by adding coarse angular quartz sand as temper. It is clear that the quartz sand is added temper. The grains are coarse (0.05-0.1 cm), commonly occurring and angular, indicating that the quartz may have been crushed before being added to the paste or may represent juvenile quartz from a slow moving fluvial system. The quartz sand temper is non-diagnostic in terms of provenance and can be derived from many river bank or beach of which there are many in the archipelago.

Fabric 10 is unlike Fabrics 1 to 7. It does not contain the coarse, medium or fine alluvial sediment inclusions found in other fabrics, such as chert, rock fragments and iron oxides, but has a more homogeneous petrographic composition. Despite being

technologically different, like Fabrics 8 and 9, the clay is very fine but contains rare fine and silt sand sized quartz inclusions. The fabric does, however, contain granite which some show granophyric texture and unidentifiable altered rocks. Although Fabrics 4 and 6 contain granite, the granite of Fabric 10 has a different composition to Fabrics 4 and 6. Furthermore, the granite inclusions in Fabric 10 do not occur in the same combinations as Fabric 4, therefore, they are unlikely to be from the same source. As stated in Fabric 4 above, granite is found in the Kapoas Peninsular southwest of El Nido, however, other occurrences of granite might not have been mapped. It is impossible to identify the locality of this fabric based on the petrography. Although in hand specimen there is a good sized sample, this ceramic type (in terms of its grey colour and paddle impressions) is ubiquitous in Southeast Asia and, therefore, difficult to tie to a specific ceramic producing area.

6.15.11 Remarks on provenance

Although the Dewil Valley is a limestone karst environment, the thin sections do not show degraded limestone, bioclastic limestone or calcite inclusions and the clay matrices are non-calcareous. This may suggest that clay deposits were not weathering deposits mined from directly over limestone outcrops but more likely to come from sedimentary deposits such as riverine deposits because of their composition. All analysed ceramics appear to have been made from sedimentary clay sources, rather than residual clay sources which form *in situ*. These alluvial clays were formed by the erosion, transportation and deposition of clay rich minerals, usually by water, accumulating some distance from their source. With sedimentary clays, clasts may come from a wider range of parent rocks than residual clay with increasing distance and may not bear any mineralogical relationship to the underlying bedrock (Quinn 2013: 120). Coarse materials of rounded fragments of schist, phyllite and chert are found in alluvial deposits of the Dewil River SEAICE (1999: 86). Therefore, it is not unlikely that the combination of chert, quartz and feldspar in Fabrics 1 to 5, were naturally occurring clasts within a sedimentary clay source and not added as temper. The grain size and roundness of the inclusions formed by the action of a highly dynamic fluvial system are also an indicator that it is natural rather than temper.

This study has attempted to determine potential sources of raw materials and possible location for the manufacture process of the ceramics excavated at Ille Cave. However, there are issues with this study. Attempts at provenance are based on incomplete geological information as the island is under-researched. The direct area has not been surveyed completely. The survey by the Bureau of Mines and Geo-sciences (1981, [Mines and Geosciences Bureau 2010]) covers a wide area but not all areas are fully mapped, therefore, the geologic record is incomplete and the areas that are mapped are not detailed enough to be able to use this data for accurate provenancing. Furthermore, at present there are no detailed topographical maps of El Nido with river drainage indicated. With Google Earth, although it shows general topography and some parts of rivers, there is no terrain, therefore, it was insufficient for examining river and drainage basins which would indicate the direction of sediment transport. The sample was relatively small comprising 44 thin sections, the rock inclusions could not be matched with certainty to a geological area and many inclusions appeared altered. Although the methodology of matching rock inclusions in thin section to occurrences of parent rocks and identifying drainage pattern in El Nido is sound, at this stage, detailed provenance of the ceramics cannot be undertaken with the data that currently exists. Quinn (2013: 119) argues that although it may be possible to distinguish between local and non-local materials, more frequently, petrography can only indicate the general area within which ceramics were manufactured. This is the case with the Ille assemblage studied.

Due to the paucity of geological information, none of the fabrics can be pin pointed with accuracy to the Dewil Valley. However, the occurrence of local chert from the Bacuit Formation (Pb) and the 'criterion of abundance' suggests that a "particular type of ceramic object or a specific fabric will occur in its greatest abundance near to its place of origin and its frequency will decay with increasing distance from the source" (Quinn 2013: 119). Fabrics 1 to 5 have elements in common which tie them together, such as the presence of naturally occurring chert and quartz and other occurring rock inclusions such as sandstone in Fabrics 3 and 4. Hematite (iron oxides) and chert occurring together are also found in the fluvial deposits which are heavily present especially in the fabrics. The components of these fabrics have similar shape and size

and are likely to be from the same environment if not erosional and fluvial system. Due to the presence of these components and their local availability, these raw materials may have been sourced locally to the Dewil Valley or in other neighbouring areas of northern Palawan which suggest clay sources may be local. This is complicated when suspected local rock inclusions occur in thin section with rock fragments which may be found in central or southern Palawan (e.g. Fabric 1). However, this is not to say that the fabrics are not local to the Dewil Valley but that the geological record is incomplete and more surveys of the area may yield further information.

Fabric 6 has components to tie it to Fabrics 1 to 5 but it contains andesite which is not found in northern Palawan. At present, Fabric 6 is an outlier. Fabric 7 has a different composition to Fabrics 1 to 5. However, the presence of a mica schist element along with the fact that lithology of northern Palawan includes mica schist points to a local but different source to Fabrics 1 to 5 as there is an absence of chert and it does not share the same alluvial sediment elements. Thus, Fabrics 1 to 7 are potentially good candidates for clay sources and a learning tradition local to El Nido.

Fabrics 8 to 10 are made from different raw materials. They are distinctively different in composition as well as technology to Fabrics 1 to 7. The clays are fine and do not contain coarse or medium sized mineral or rock inclusions and as such the fabrics are treated differently with tempering material. It is not possible to provenance Fabrics 8 to 10 based on its petrographic composition, nor is it possible to relate the fabrics to a geological area. However, Fabrics 8, 9 and 10 are good candidate for non-local ceramics. Fabrics 8 and 10 are composed of very fine clay and they do not contain the coarse, medium or fine sand sized mineral or rock inclusions, specifically quartz, chert and iron oxides, found in other fabrics. This indicates that the clay was collected in a different location to the other clays. However, Fabrics 8 and 10 are technologically different to the other fabrics, this suggests a different learning tradition carried out by a different community of practice for the preparation of the paste. There are few samples of Fabric 9 in the studied assemblage. Similar to Fabrics 8 and 10, Fabric 9 has very fine clay without mineral and rock inclusions, however, it contains rare medium sand sized quartz and frequent fine sand sized quartz inclusions which Fabrics 8 and 10

do not. Fabric 9 is the most technologically different as it is the only fabric tempered with rice. Thus, if rice agriculture was not present during the time of this fabric, then Fabric 9 is also a good candidate for non-local ceramics. Although 10 fabrics were established and 7 of them could be provenanced to north Palawan, there may be more fabrics in the wider assemblage which may contain more information, such as distinctive and/or exotic rock fragments which may help with further provenancing. The following section considers all the Types, Potential Types, production processes and potential provenance to see what learning traditions are evident within the studied assemblage and the implications for communities of practice for those who used Ille Cave.

6.16 Learning traditions at Ille Cave

The pottery evidence has been used to identify variation within pottery technology and argue that within the overarching ceramic tradition found at Ille Cave, distinct learning traditions are evident, suggesting different communities of practice. As discussed in Chapter 4, technological practice recognised in the production sequence, is a key indicator for identifying different learning traditions. The criteria for learning traditions at Ille are based on differences in practice during the production sequence which can be observed and measured by macroscopic and microscopic analysis.

Based on the materials analysed in this study, at least 6 different learning traditions can be distinguished from the Ille sample based on correlating attributes (table 6.16). Table 6.17 shows which types are found within the learning traditions. These are traditions identified from the sample and are, therefore, generalised traditions combining different scales of analysis. The basis for distinguishing a learning tradition and attributing types to specific learning traditions starts with the fabric analysis. Based on the thin section analysis alone, there are 10 distinct fabric groups based on paste and technology. Fabrics 1 and 2 have clear similarities with iron rich clay giving the vessels a fired red colour and grog temper. Fabrics 3 to 6 have some compositional commonalities such as the chert and quartz alluvial sediment and to a lesser extent weathered igneous rock and sandstone. Fabrics 4 and 6 also have grog temper. Fabric

7 includes dominant inclusions of quartz grains and mica which the other fabrics do not. Fabric 7 does not contain chert or grog temper. Fabrics 8, 9 and 10 are clearly different groups to Fabrics 1 to 7, due to the difference in fine clay and tempering technology (grog, rice and coarse quartz sand respectively). However, paste recipe alone does not equate to a learning tradition and must be considered in the context of other ceramic attributes. The following learning traditions are ordered one to six based on the level of confidence starting with one as the most secure.

6.16.1 Learning tradition 1

'Type 4: Grey Cord Marked' (Fabric 10) represents learning tradition 1. Type 4 is the most different to other Ille types as it does not share similar traits with other types and is the most distinct learning tradition. It is distinct from the other ceramics in its composition and microstructure, temper technology, surface treatment, firing technology and fired colour. Although it is impossible to identify the provenance of this fabric based on the petrography, in terms of composition the fabric consists of fine clay without the coarser mineral inclusions present in the other fabrics. Therefore, it is unlikely to be from the same clay source as the other fabrics. The clay was prepared differently to the other fabrics. Due to the fine nature of the clay, the fabric would have needed tempering. Coarse quartz sand was added to the paste as temper. No other fabrics have quartz sand temper of this variety. Although other fabrics have quartz grains as part of the alluvial sediment only this fabric has angular quartz that has been added as a deliberate temper. The quartz sand temper is comprised of strained and polycrystalline quartz, some of which are partially foliated and with a brecciated texture. These characteristics are not present in the quartz grains found in the alluvial sediments. In terms of microstructure, the fabric is porous with voids formed by the action of paddle and anvil beating and visible in the sherd by macroscopic inspection as well as thin section. The range of grey fired colour of the exterior and interior surfaces are not found in other types. The firing technology is also different to other types. Type 4 was fired in a majority reducing environment. However, there was also variation in firing atmosphere where parts of the core showed oxidisation during firing and a return to reducing.

Learning tradition	Fired colour	Fabric composition	Temper technology	Forming method	Decorative technique/surface treatment	Firing atmosphere
1	Grey	Fine clay	Coarse angular quartz sand	Paddle and anvil	Cord bound paddle impressed	Majority reducing
2	Red	Iron rich with alluvial inclusions	Grog temper	Hand fashioned	Incised and impressed C stamps, geometric shapes, horizontal bands, punctates Highly polished Red-slip White infilling Painted No decoration	Oxidising
3	Various	Fine clay	Rice chaff and straw temper	Paddle and anvil	Carved paddle impressed No decoration	Reducing
4	Buff	Fine clay	Grog temper	Paddle and anvil	Carved paddle impressed No decoration	Reducing
5a	Brown	Alluvial sediment	Grog temper	Hand fashioned	Incised and impressed Triangular and geometric shapes, horizontal bands, punctates No decoration	Oxidising
5b	Dark brown	Mica and quartz	None	Hand fashioned	Incised and impressed Triangular and geometric shapes, horizontal bands, punctates No decoration	Reducing
5c	Brown	Alluvial sediment	Grog temper	Paddle and anvil	Cord bound paddle impressed Carved paddle impressed	Oxidising/reducing
6	Dark brown	Fine clay	Unknown	Hand fashioned	Shell impressed Highly polished	Reducing

Table 6.16 Technological differences between learning traditions and the correlating attributes which constructs the learning tradition.

Learning tradition	Fabric	Type #	Type name
1	Fabric 10: Coarse quartz temper fabric	4	Grey Cord Marked
2	Fabric 1: Grog and chert fabric Fabric 1: Grog and chert fabric Fabric 2: Grog, quartz and chert fabric	1 2 3 11	Red-Slipped Decorated Red Ware Decorated Red Ware Plain Painted
3	Fabric 9: Rice temper fabric	19 6ii	Rice temper Carved Paddle (Rice) F9
4	Fabric 8: Fine clay with grog temper	18 6iii	Buff fabric Carved Paddle (White) F8
5a	Fabric 3: Sandstone and altered igneous fabric Fabric 4: Grog and quartz fabric Fabric 5: Chert and quartzite fabric Fabric 6: Chert and volcanic rock fabric Fabric 11: Light brown fabric	7 8ii 12ii 13 14 15 17 20 -	Impressed restricted rim Incised Triangles Pedestal bowl Large brown rim Restricted rim Unrestricted rim Brown fabric Uncategorised Decorated No Types
5b	Fabric 7: Mica and quartz fabric	8i 12i	Incised Triangles Pedestal bowl
5c	Fabric 3: Sandstone and altered igneous fabric Fabric 4: Grog and quartz fabric	5 6	Bound paddle Carved Paddle
6	Fabric 12: Fine dark brown fabric	9 16	Shell impressed Flat triangular rim

Table 6.17 Fabric groups and ceramic types that are found within the learning traditions.

Unfortunately, this type only survives in body sherds and no diagnostic elements have been recovered. Although form and shaping processes cannot be deduced, paddle and anvil impressions suggest that, like other paddled vessels, the vessel was a restricted rim with a rounded body. However, because the sherds are completely flat, it is likely that the vessel was large in size as the sherds show no curvature. Although there are other cord bound paddle impressed sherds in the studied assemblage (including all the subtypes of type 5), the intricate and tight cord binding on the paddle is of a different quality and neatness to the other types, and the depth of the impressions show that the clay body was struck harder than with the other vessels. Due to the many differences in process and attributes, Type 4 is the furthest in fabric composition and technological process to the other types in the studied assemblage. Type 4 represents

considerable difference in ceramic practice and it is highly likely that Type 4 represents a distinct learning tradition.

6.16.2 Learning tradition 2

Like learning tradition 1, learning tradition 2 represents a clear learning tradition with distinctions in fabric composition, forming and firing technology and surface treatment. Learning tradition 2 is comprised of 'Type 1: Red-Slipped Decorated', 'Type 2: Red Ware Decorated', 'Type 3: Red Ware Plain' and potentially 'Type 11: Painted'. Across all types, the fabric is consistently iron rich with alluvial sediment and fired in an oxidising environment to a distinctive deep red-orange colour. The types contain grog temper made of the same clay material as the parent fabric which is similar to the grogging technology of vessels in learning tradition 5 but different to the grogging technology of learning tradition 4. Learning tradition 5a and 5b also have some of the same elements of the clay matrix, such as chert. However, although the raw clay might be sourced in a similar riverine environment, it is the processes and technology, and correlating attributes of the types that make this learning tradition distinct.

'Type 1: Red-Slipped Decorated' and some sherds from 'Type 3: Red Ware Plain' are pedestal bowls. Type 1 has a different form that is not replicated in the other undecorated pedestal bowls (Type 12). The bowl and foot portions are broader and shallower, therefore, the mental template and forming technique is different. It is the surface treatments that distinguish the vessels. The vessels are highly polished and smoothed on exterior surfaces. In addition to the red fired colour, Type 1 is red-slipped. Types 2, 3 and 11 may also be red-slipped, however, without further analysis it is difficult to determine macroscopically. The incised and impressed decorations are intricate and it contains the unparalleled c stamped decorations in the studied assemblage and in Southeast Asia so far. There is infilling with a form of calcium carbonate in the incised and impressed grooves which is only found on these types and 'Type 10: Incised, impressed, infilled'. 'Type 11: Painted' has tentatively been placed in learning tradition 2 as although the vessels are painted with red, orange and brown pigments, under the paint and on the interiors, macroscopically it shows similar clay body to Types 1, 2 and 3 where the fired colour is mostly red showing an iron rich clay

with coarse alluvial sediment similar to the types of Fabric 1. However, there are too few samples and no thin sections have been made.

Due to the correlating attributes of these types and the distinctness of composition and technology, especially decorative technique, it is highly likely that these types represent a distinct learning tradition. In term of the criterion of abundance, this learning tradition contains large quantities of sherds and its clay composition has the potential to be geographically tied to northern Palawan, and possibly even the Dewil Valley which suggests a social group and a community of practice of people who lived close to or in the Dewil Valley.

6.16.3 Learning tradition 3

Learning tradition 3 represents the most intricate process of the ceramic types found at Ille. The addition of rice temper shows that a conscious choice would have been made in the selection and addition of rice materials. It indicates a production sequence prior to the processing of raw materials and a level of social organisation linked to agriculture. There are multiple processes and actions before the addition of rice to the paste. As discussed above, the chaff and straw were by-products of the threshing and dehulling process made during the later stages of crop processing. Rice temper implies that this learning tradition goes hand in hand with rice production, regardless of whether it was actually grown by the potting community or whether it was procured by the potters.

Rice temper has been found in at least two different types; 'Potential Type 19: Undecorated sherd (Rice temper)' and 'Subtype 6ii: Carved Paddle (Rice) F9' both of which are Fabric 9. Although both have different surface treatments, in terms of attributes, in thin section, both show fine clay without mineral inclusions apart from frequent fine sand sized quartz grains. The quartz grains are different to other fabrics in terms of size, shape and frequency. The fabrics are porous from the rice temper pseudomorphs and voids from either drying or firing which are fabric following (i.e. strongly aligned to margins of samples). Subtype 6ii has impressions from a square carved paddle implying it was made using the paddle and anvil technique. Although

other types are struck with a carved paddle, the paddle impressions are uniformly square and deep showing the pressure applied was harder than other paddles whose square carvings were uneven and shallow. The undecorated sherds may also have been paddled with a plain paddle. It is likely that these types were fired at a lower temperature than the other types because organic material begins to burn at a lower temperature.

Like the ceramic type in learning tradition 1, it is impossible to identify the provenance of this fabric. However, the fine clay without the alluvial sediments or mineral inclusions present in the other fabrics suggests it is unlikely to be from the same clay source as the other fabrics. It is unlikely to be from the exact same clay source as Fabric 10 due to the frequent fine quartz grains in Fabric 9 which are not present in Fabric 10. Due to the difference in fabric composition, the technological process for the production of these types and the additional processes for the procurement and production of chaff and straw for temper, it is highly likely that Potential Type 19 and Subtype 6ii represents a distinct learning tradition from the others.

6.16.4 Learning tradition 4

‘Type 18: Buff fabric’ and ‘Subtype 6iii: Carved Paddle (White) F8’ (Fabric 8) comprise learning tradition 4. In this section, both show fine clay without mineral inclusions and large coarse grains of grog temper. The grog temper in this learning tradition are different to the grog temper in learning traditions 2 and 5a and 5b in terms of size as they are larger and the grog temper contains few fine iron concretions and quartz grains which does not appear in the parent fabric. Therefore, the same ceramics were not recycled as seen with the other types and the grog temper are made from different clays and came from another ceramic source.

Like the ceramic types in learning traditions 1 and 3, it is impossible to identify the provenance of this fabric. The fine clay without the alluvial sediments or mineral inclusions present in the other fabrics suggests it is unlikely to be from the same clay source as the other fabrics. Although it has rare occurrences of serpentinite (occurring more frequently in Fabric 1), at this stage it is not enough to prove a geological

relationship. The fine nature of the clay is most like Fabric 10, but they have different tempering and firing technology.

Sherds in Type 18 are smooth and undecorated, while Subtype 6iii has impressions from a square carved paddle implying it was made using the paddle and anvil technique. Like Subtype 6ii, the paddle impressions are fairly uniformly square and deep showing the pressure applied was harder than other paddles. Subtype 6iii might have a coating or a white 'slip' and this is visible in thin section representing a different raw materials gathering and preparation process to Type 1 which has a 'classic' red-slip commonly seen in Southeast Asia. Both have grey cores showing the incomplete burning of organic material and a diffuse core margin grading into the surface colour.

Unfortunately these types only survive as small body sherds, no diagnostic elements have been recovered and there are only few samples of this type in the sample. However, it is considerably different in composition and technology to the other types at Ille to warrant it being a distinct learning tradition.

6.16.5 Learning tradition 5

- **5a Alluvial sediment (some with grog temper), incised and impressed, oxidising**
- **5b Mica and quartz fabric, incised and impressed, reducing**
- **5c Alluvial sediment (some with grog temper), paddle impressed**

Learning tradition 5 has been the hardest to classify because of the variation between the types and assessing unifying attributes. It has been divided into 3 sub-learning traditions based on differences in fabric, decorative technique and firing atmosphere. However, there are common attributes that cross from one sub-learning tradition to another indicating that these types are good candidates to be united as a possible learning tradition. This learning tradition also contains sherds which have not been placed into a type (e.g. Category 20: Undecorated body sherds and Decorated No Types) but share one or more of the attributes discussed. Macroscopically, the

majority of the sherds have the same fired brown colour. However, in thin section, from the few sherds that were sampled, at least 5 distinctive fabrics could be established (Fabrics 3, 4, 5, 6 and 7). Forms in this learning tradition include varying sizes of pedestal bowls, and restricted and unrestricted rims with varying lip forms. Few intact vessels of this form are seen in the assemblage; however, those that do, have rounded bases and likely globular in form. The pedestal bowls, restricted and unrestricted rims are mostly undecorated with varying degrees of smoothing and polishing.

Learning tradition 5a has Fabrics 3, 4, 5 and 6, and shares the same iron rich paste with varying frequencies of naturally occurring coarse chert and quartz from alluvial sediments. Different rock inclusions make each fabric distinctive and allude to a provenance. While Fabric 1 contains alluvial sediment, indicating they may come from similar riverine environments, the production processes (especially forming and surface treatment) are different enough to suggest a different learning tradition. Fabrics 4 and 6 contain grog temper which has a similar composition and arrangement as the parent fabric, showing it is made from similar or the same clay material. This grogging technology is similar to the grog temper in Fabric 1 but different to Fabric 8. Further thin sectioning may determine more fabrics but that this stage, those that could not be classified as belonging to Fabric 3, 4, 5 or 6 have provisionally been termed Fabric 11 (light brown fabric, based on macroscopic fired colour). Ceramics in learning tradition 5a appear decorated and undecorated. Some of the ceramics are incised and impressed with triangular and geometric shapes, horizontal bands, punctates and mostly fired in an oxidising atmosphere.

Ceramics in learning tradition 5b are made with Fabric 7 which has distinctive dark clay with mica. However, 'Type 8: Incised Triangles' and 'Potential Type 12: Pedestal bowl' are made from two completely different fabrics; Fabric 7 and light brown Fabric 11 (though not thin sectioned it may be one of Fabrics 3, 4, 5 or 6; figs. 6.67a-b). 'Subtype 8i: Incised Triangles F7' is particularly notable because its correlating attributes such as its form with a pointed lip rim and incised open triangles and horizontal bands, show that it is a distinct type made with two different fabrics from different clay sources.

This shows that the potters made the same type of vessel with clays procured from different geological sources – or different potting groups made the same style of vessel using different clay sources. If the latter is the case, although it may be a different social group, they share the same learning tradition. Thus this learning tradition has been divided into parts 5a and 5b to show that clear divisions in fabric can be seen in this learning tradition.



Fig. 6.67 Learning traditions 5a and 5b discernible by difference in fabric, Type 8: Incised Triangles. Image scale = 0-5 cm (image: Y. Balbaligo)

Fig. 6.67a Subtype 8i: Incised Triangles F7, Fabric 7 (IV-1998-P-22062)

Fig. 6.67b Subtype 8ii: Incised Triangles F11 (IV-1998-P-42100, compare with fig. 6.24e amongst range of Type 8)

Learning tradition 5c is made with the same iron rich paste with varying frequencies of naturally occurring coarse chert and quartz from alluvial sediments (Fabrics 3 and 4). However, it differs in the surface treatment and subsequent decorative technique as ceramics in learning tradition 5b are finished with a paddle leaving bound or carved impression. This shows that there this sub-learning tradition is distinct in practice. It is made by paddle and anvil without incised or impressed designs. Furthermore, paddle impressions and incised or impressed designs do not occur together. This is clearly a different category but it is in the same learning tradition because the paste is prepared and processed similarly to learning traditions 5a and 5b.

In terms of the criterion of abundance, this learning tradition contain the largest quantities of sherds and its clay composition has the potential to be geographically tied to northern Palawan, and possibly even the Dewil Valley which suggests a social group and a community of practice of people who live close to or in the Dewil Valley.

6.16.6 Learning tradition 6

Learning tradition 6 is a tentative category and has been tentatively classified from Fabric 12. Few samples were seen and due to the apparent paucity of this type, at this stage no thin sections were taken. It is comprised of 'Type 9: Shell impressed' and 'Potential Type: 16: Flat triangular rim'. Macroscopically, it is a deep dark brown colour and fired in a reducing atmosphere. Some samples have coarse quartz sand, rock fragments and possibly mica in some samples. However, at this stage it cannot be related to other fabrics already established.

The rim form of Type 9 is unusual and there are no similar forms in the Ille assemblage studied. The vessel is a restricted mouth, flat on the exterior with a square flat lip. Some sherds show a slight carination. It is difficult to determine the overall form of the vessel because of the small and flat nature of the surviving sherds. The sherds are smoothed, with a lustre and are highly polished. These examples possibly represent another learning tradition at Ille. The rim form of Potential Type 16 is also unusual and not replicated in other types. There is also the possibility that this type might be part of a wider learning tradition.

'Type 10: Incised, impressed, infilled' has been tentatively classified as Fabric 12 due to the dark character of its clay and has not been thin sectioned. Although it does have coarse quartz sand and rock fragments inclusions like Type 9 (also not thin sectioned), this type has been omitted from being assigned to a learning tradition as there are too few samples of this type. Its form and wall thinness are unlike any types examined so far. It has ubiquitous horizontal incised lines and punctate impressions but it has infilling which is also found in Type 1, however, they are from a different learning tradition. Thin section analysis may show compositional similarity to one of the 10 fabrics already established which would then tie it to a learning tradition or this type might form part of another or wider learning tradition at Ille.

6.17 Final remarks

Although these learning traditions have been inferred, the samples clearly show that there is a range of related, but not identical, samples that can be grouped by correlating attributes and technology to show a learning tradition. Potters may have used fairly similar local clays, but it is not just the practice of paste preparation that has made it the same. Ceramic variation is not driven by fabric, as the learning tradition is about the way that people made pottery. Even though ceramics may look similar there are clear distinctions in terms of practice and technique.

Based on future microscopic and macroscopic analysis of the complete Ille assemblage, it is likely that more fabrics can be established through further thin sectioning. This research has also shown that ceramic assemblages from other caves sites in the Dewil Valley show macroscopic differences between the Ille assemblage and each other. It is likely that thin section analysis will also show microscopic differences by compositional and technological variation in the fabrics. These assemblages show sophisticated learning traditions and technological practices, potential interaction, pointing to the complex social relations and social practices within a funerary context. Further thin sectioning is recommended, especially of the undecorated sherds and ceramics from the various cave sites in the Dewil Valley and the wider El Nido area.

Overall, the methodology set out to develop learning traditions through the identification of technological variation. Similarities between wares and types comprise correlating ceramic attributes which when analysed together distinct learning traditions are evident. This was studied in the context of the cemetery site and the period of deposition. The analysis has identified at least six learning traditions that can now be related internally within the studied sample but also to other ceramics previously reported in the Philippines and beyond. These findings will be taken together to understand how learning traditions can suggest communities of practice at Ille Cave. The next stage is to consider how the ceramics are part of social relationships outside of the Dewil Valley and beyond.

7. Plurality of Pottery, Plurality of People

This research has used ceramic analysis to investigate variations in technological practices at Ille Cave, and its relationships with pottery traditions previously reported for wider Southeast Asia. This research has proposed that ceramic technology can be seen as an indicator of different learning traditions and learning networks, suggesting different communities of practice. Raw materials suggest that the majority of the pottery was produced locally, while some inclusions indicate that some of the pottery may be of non-local origin which point to traditions outside of the local area. The ceramics were mostly found in disturbed contexts with evidence of burials. However, the social groups who used Ille Cave as a cemetery site may or may not have been the pottery producing community. This and other possible explanations are discussed below.

Interpretations are presented as low level and high level inferences, and different levels of likelihood and uncertainty are expressed in this discussion. These interpretations were developed using the results of the ceramic and contextual analyses in Chapter 6 to address the research questions in Chapter 1. This chapter will discuss each research question and address wider issues within the topic. Section 7.1 discusses how there is a plurality of pottery, while section 7.3 discusses the plurality of people. These are understood within the archaeological context (section 7.2), and in the geographic context of northern Palawan (section 7.4), the Philippines and the implications for wider Southeast Asia (section 7.5).

7.1 Identifying the character and technological practices of the Ille earthenware assemblage

7.1.1 Plurality of pottery

Research question 1 asked how can the range of pottery fabrics, forms and decorations at Ille Cave be characterised and to what extent can distinct techniques be

identified? The methodology was developed to characterise the form, decoration and fabrics of the pottery in order to measure variation to look at the relationship between them to ask larger questions concerning people's activities at Ille Cave. This research clearly establishes that variations in the ceramics were the result of differences in technological practices which could then be attributed to different learning traditions.

In summary, two ware groups were established; Red Ware and Grey Ware. These wares were prominent and distinct in the Ille assemblage, and are similar to red and grey wares identified in wider Southeast Asia. There were at least eleven ceramic types showing difference in ceramic technology. A further nine Potential Types made up of undecorated forms and undecorated fabric were described. However, there was not enough information to securely group them into types and there may be overlap with other categories (for example 'Type 3: Red Ware Plain' is problematic). Therefore, it has been demonstrated that there is a plurality of pottery which comes from a plurality of technological practices.

7.1.2 Plurality of technological practice

The Results Chapter 6, section 6.14 details the *chaîne opératoire* and technological practices for the creation of all the ceramic types at Ille Cave. Understanding ceramic technology is important as it provides the means of understanding technical processes and as a way of identifying people through their learning traditions. It is the technology rather than simply the surface decoration that provides the most appropriate way of identifying distinct material practices of different social groups. Due to the fact that habitation sites have not been found, there has been a problem identifying people and/or groups of people who might have used Ille Cave, and it is difficult to match other material culture to the different ceramics groups. This thesis has proposed that rather than identifying specific groups of people, it is more prudent to conceptualise different groups of people as communities of practice who can be identified by their learning traditions (see chapter 4). This provides a more nuanced means of discussing people who cannot be identified directly (see section 7.4 below). The variety and diversity of pottery within the Ille assemblage tells a number of 'ceramic narratives'.

7.1.3 Ceramic narratives

A 'ceramic narrative' is the story that a group of pottery, from the same learning tradition, tells about the community of practice who made the pottery and their relationship with the wider world. These ceramics have correlating attributes and shared production processes. Understanding the 'determined' aspect of raw materials, the geological environment, and working with the clay was part of the methodology. By association, the ceramics can be related to specific technological ceramic practices or traditions in wider Southeast Asia. Ceramic narratives can be understood on different levels. Similar to the concept of object biographies and object life histories (*cf.* Appadurai 1986; Gosden and Marshall 1999; Hoskins 2005; Joy 2009), ceramics have an individual object biography and a group of the same type has a collective artefact biography. In examining object biographies, the focus is usually on consumption of vessels rather than the production, and then its new social context, for example in the context of museums (Dudley 2010; Hill 2012). Although this aspect of the narrative is important, this research focuses on the relationship between pottery and people, and the social connectedness.

The following ceramic narratives are connected to the larger grand narratives of Southeast Asia through shared practices. As espoused throughout this thesis, grand narratives are problematic. While grand syntheses are useful for understanding global patterns, data should not be forced into inflexible models. This research instead suggests smaller scale narratives that acknowledge variation and are about localised learning networks which may relate to wider practices. The *chaîne opératoire* approach is thus well suited to documenting and quantifying variability, deviations, and diversity which arise from operational sequences and are part of embedded social practices (Dobres 2000: 180). Overall, the idea of ceramic narratives acknowledges that there are levels of interpretation necessary for understanding the social context and production of the Ille earthenware.

Ceramic Narrative: Red Ware

The Red Ware pottery has a strong ceramic narrative in the Ille assemblage. The colour red is associated with ritual in the Philippines (*cf.* Peralta 2000) and the red-slipped

vessels that take the shape of pedestal bowls were used as part of the mortuary practice (see 7.2.2). As discussed in Chapter 2, Red Ware is part of the grand narrative of Southeast Asia. There has been an assumed link between the presence of early red-slipped pottery and the presence of Neolithic Austronesian language speakers; it has been used as a proxy indicator for the movement of people across Southeast Asia to the Pacific Islands, specifically the Lapita pottery. Decorated Red Ware is also claimed by Solheim to be part of the pre-Sa Huynh-Kalanay pottery tradition (Solheim 1976a, 1976b, 2006, 2008) and subsequently the Sa Huynh-Kalanay pottery tradition (see 7.5 below).

Red Ware is found throughout the Philippines and in particular, red-slipped circular and semi-circular stamped pottery has had particular significance in the interpretation of the archaeology of the region (see Chapter 2). As demonstrated, although red-slipped circular stamped pottery with white infill is common in Southeast Asia and in Lapita pottery, this ceramic type with correlating attributes of red-slipped pedestal bowls with c stamps have not yet been found at sites outside of Palawan. Red-slipped c stamped pottery and 'leaf' patterns have been found at Linaminan, southern Palawan (although it is unknown whether it was the same fabric and the forms appear different) and on a jar burial at Guarda Rockshelter, in the Tabon Caves Complex, southern Palawan (the difference is discussed below in 7.3.1). It is likely that more red-slipped c stamped pottery will be found in Palawan. It is possible that the red-slipped, white infilled, c stamped rim sherd from Tarague, Guam (Pre-Latte c.2500-1600 BP [551-766 to 415-534 BC] fig. 2.5, Chapter 2) was not related but earlier than the Ille and Linaminan c stamps and, therefore, a modified response to the red-slipped circular stamped sherds in Southeast Asia or an independent innovation.

Either the movement of the pottery producers or the pots themselves point to long range travel within Palawan. There was an active and clear modification made to the stamping tool that shows a distinct decorative technique that is not replicated at other Southeast Asian sites. This technique clearly points to a community of practice distinct from other producers of red-slipped pottery where this decorative style becomes embedded as part of practice. Superficial comparison of similarities in pottery

appearance has often been used to infer the inter-relatedness of groups in different areas, however, the disparate nature of the circle-stamping found in the groups and associations does not demonstrate any straightforward relationships, although the presence of circle, semicircle stamped and white infilling may indicate some form of loose relationship.

The c stamps specifically correlated to red fired pedestal bowls and may be a motif and part of a shared mortuary practice among the people of Palawan. There is a possibility that the variation in similar decoration, especially the c stamps and forms, occurs as part of localised pottery production in response to circular stamped pottery in the wider region. The motif could have been imitated then modified and adapted from other pottery traded or exchanged or ‘ceramic ideas’ passed on within the region. However, while the c stamp is visually distinct, it is the correlating attributes of fabric, forming and firing technology which comprise the learning tradition. This is clearly related to the mortuary practice and forms the ceramic narrative.

Ceramic Narrative: Incised and Impressed Decorations

Incised and impressed decorations such as geometric shapes, triangles, horizontal bands and punctates are found in the Ille assemblage and are ubiquitous in Southeast Asia and provide a strong ceramic narrative. While decorations may look superficially similar and have been used to infer relationships, researchers must be cautious in associating cultures by decoration. These motifs have a presumed ceramic narrative with the Sa Huynh-Kalanay pottery tradition and link to the Metal Age (Solheim 1964a; 2002). However, as discussed in 7.5 below, these decorations have links to wider pottery traditions in Southeast Asia and beyond, and are not necessarily linked to Sa Huynh-Kalanay. Although decoration as a unit of analysis is problematic, to continue looking at decoration methodically, Rispoli (2007: 2) argues that researchers need a “shared normalised terminology”. Ceramic studies would benefit from a standardised vocabulary specific to Southeast Asia to aid analysis and comparison. This thesis has presented standardised terminology by using and building on terms used by Solheim (1964a) for decorative aspects, as well as Summerhayes (2000), and White and Henderson (2003) for rim nomenclature. In particular, guidelines from the Prehistoric

Ceramics Research Group (PCRG 2010) were used to facilitate consistent identification, description and recording of ceramics with standardised templates, for example, for fabric inclusion density, sorting of inclusions and roundness classes. These guidelines are of particular use for ceramics specialists studying hand-made low-fired non-industrial pottery and can be accessed online (PCRG 2010; http://www.pcr.org.uk/News_pages/PCRG%20Gudielines%203rd%20Edition%20%282010%29.pdf). Systematic descriptions of thin section analysis proposed by Whitbread (1989, 1995) and Quinn (2013) also further contribute towards standardised terminology.

Ceramic Narrative: Paddle Impressed Pottery

The Grey Ware, especially cord marked paddle impressed pottery, is also part of the Southeast Asian grand narrative. It was thought that cord marked pottery was one of the oldest ceramic types in Southeast Asia and linked to the Neolithic (see Chapter 2). Fox (1970: 178) uses the cord marked vessels at Leta-Leta to justify his position that cord marked vessels indicate Neolithic occupation and links it to the Tabon assemblage as well as Island and Mainland Southeast Asia. Regarding the pottery function of cord marked vessels, this technique is thought to represent utilitarian vessels such as cooking pottery (e.g. Loofs-Wissowa 1980: 5-6). Furthermore, the cord marked features may be functional as well as decorative in that it provides a rougher surface to allow a firm grip and less slippage. However, this is not always the case as paddle impressions are sometimes smoothed over leaving an undecorated surface (Peacock 1959: 149; Solheim 2007: 3). Unfortunately at Ille, only small flat fragments have been excavated and vessel form or function cannot be determined. Furthermore, there is no certainty that the vessels are 'utilitarian' and this term needs to be re-examined.

There are at least four variations of cord bound paddle impressed pottery (Type 4, and Subtypes 5i to 5iii) and at least five variations of carved paddle (Subtypes 6i to 6v) on at least 7 different fabrics (Fabrics 3, 4, 8, 9 and 10 from thin section analysis, and Fabrics 11 and 12 by macroscopic analysis). Potters used shared forming techniques but different raw materials indicating they may have been made in different places. The difference in specific preparation and treatment of the bound and decorated paddle itself, coupled with difference in clay material, clearly shows different learning

traditions and potentially points to different communities of practice using a ubiquitous technique adapted for their purpose. The Red Ware and Grey Ware are interesting because despite the disturbance at Ille, both these types are found together in the same contexts and cemetery phase. These two wares show clear and distinct differences in ceramic technology, manufacture process and raw materials in that the clays are geologically dissimilar. It is a possible that these two ware types represent different contemporary communities of practice and possibly social groups who are geographically distant but who may have interacted (discussed below).

It is clear that the red-slipped earthenware and cord marked paddle impressed pottery come from two major pottery traditions that have spread in Southeast Asia but it is unknown how or if the two might be related. It is beyond the scope of this thesis to suggest whether the red-slipped pottery at Ille was related to the red-slipped pottery horizon associated with the Austronesians, or if the cord marked pottery was associated with the Neolithic Austronesian or Bau-Malaysia pottery complex. The context in which the ceramics were found at Ille does not contribute to the argument about what periods Red Ware and cord marked pottery may have developed through or how these wares might have ended up at Ille. Although these wares had origins in the Neolithic, by the time these wares reach northern Palawan, it is unlikely that they were still associated with the Neolithic. In relation to other material culture, it is not unexpected that the ceramics can be considered Metal Age and part of a Metal Age learning tradition (discussed below).

Ceramic Narrative: Temper Stories

The use of temper provides a ceramic narrative. Grog temper from recycled fired ceramic and crushed into a clay body is found across the ancient world. At Ille, the petrography shows that there are two distinct types of grog temper occurring within two different parent fabrics (Fabrics 1, 2 and 4 compared with Fabric 8) which shows there are at least two different learning traditions regarding tempering with grog. Coarse quartz temper appears in a fabric (Fabric 10, Type 4) with different attributes to other sherds. It is likely that this ceramic was not local to Ille; therefore, it is unsurprising that the tempering technology, and thus learning tradition, also differs

from other ceramics. Although shell temper was found during the surface excavations (see Appendix A, fig. A.1), it does not feature strongly in the years sampled (2004 to 2008). However, as Cole (2012: 85) observes, while shell temper is a common diagnostic in earthenware from coastal sites it was absent from the sherds in the Niah assemblages. Therefore, its rarity in the Ille assemblage is also not surprising.

Although rice temper appears rarely in the assemblage, the few samples excavated clearly show domesticated rice, as opposed to wild rice, and these sherds provide much information. The earliest evidence of rice temper in the Philippines dates to c.1500 BC (Snow *et al.* 1986). In Island Southeast Asia, the current earliest date for rice from Gua Sireh, Sarawak, was AMS dated to 4807-3899 BP ([3537-3641 to 2346-2464 BC, standardised with OxCal v4.2] Ipoi Datan and Bellwood 1993). However, this date may be erroneous (Spriggs 2003). In particular, it may be too old as a date, as ceramics may contain other old carbon sources (Higham *et al.* 2009; Manning *et al.* 2011). Similar to the spread of agriculture in Mainland Southeast Asia but at a later date, Paz (2002: 281) states that rice agriculture entered Island Southeast Asia around the same time as metal technology after 500 BC, thus rice temper also correlates with pottery and metallurgy. The presence of the rice temper in the earthenware contributes to the understanding of two main areas; ceramic technology and its implications for agriculture in the region.

The rice tempered earthenware sherds are significantly different in terms of composition and technology to other types. The evidence suggests that the potters who tempered their ceramics with rice were a different community of practice to the potters who did not use temper or who used other tempering materials. The composition of the rice tempered sherds when compared to the other ceramics is petrographically different, which suggests that these potters had access to different clay sources. Furthermore, the tempering technology and macroscopic technology shows that the *chaîne opératoire* for producing the rice tempered ceramics varied from the other ceramics. The rice temper preparation process shows different steps in the paste preparation process which requires learning from shared knowledge and experience.

While there are many varieties of carved paddle impressed sherds in the Ille assemblage, the carved paddle impressions from the rice tempered sherd (Subtype 6ii) are different in appearance to the other carved paddle impressed sherds (Subtypes 6i, 6iii and 6iv). Subtypes 6i, 6iii and 6iv are made from a fabric which can geologically be related to the local area. Therefore, it is probable that the production of rice tempered ceramics comes from a different learning tradition which can be ascribed to a community of practice different to the other paddle pottery producers. Paddle impressed sherds, especially cord marked sherds, have been deemed “utilitarian ware” (*cf.* Vincent 1998: 5). It is possible that the Ille rice tempered sherds are “utilitarian” rather than ‘ritual/ceremonial’ pottery or pottery associated with burial as they do not share the form or stylistic attributes of the ritual pottery at Ille. It is difficult to ascertain what interaction took place at Ille Cave, whether the rice temper potters used the cave themselves and for what purpose (e.g. for burial or ritual practices), or if their ceramics were traded/exchanged/gifted in the area.

Although potters had technological choice and individual agency, they were also affected by environmental factors. In terms of seasonality, pottery manufacture may have been restricted to the dry season. During the monsoon season, pottery may not have dried sufficiently for firing (Vincent 1998: 8; also Arnold 1985: 61-77; McClatchie and Fuller 2014). With the addition of rice temper, pottery manufacture would have taken place after the harvest season to access rice by-products. Ethnographically, this planting takes place in July and harvesting in November, with the wet season between May and October, with April being the hottest month. Therefore, an estimate for a good period of pottery making is between the harvest and the hottest and driest months, but before the monsoon (Balbaligo 2010b).

These activities imply a level of social organisation, for agriculture as well as pottery manufacture. This leads to further questions such as: were the people who were responsible for agriculture also the pottery producers; was there a division of labour for agriculture and pottery production or did the people participate in each activity; and was pottery production a specialised craft? However, these questions are not easily answered with the current data. As yet, the scale of production cannot be

assessed, how far the field was from the production site, or where the clays were collected in relation to the cultivation site. It is not possible to know whether these ceramics were made locally to Ille Cave, whether they were imported and from where, or even if they were part of the later burial phase as they are not found within secure contexts. Though the rice tempered sherds are an indication of agriculture and a settled society, it is possible that these agriculture producers were not from the Dewil Valley. At present there is no evidence for rice agriculture but it was possible it was present in the wider region.

Paz (2002: 278) argues that the presence alone of pottery with rice inclusions need not necessarily mean rice was cultivated in the immediate area of the site. There is no direct evidence of rice production, processing/preparation for trade or consumption in the immediate Ille area. During excavations at Ille Cave, no archaeological rice husk or caryopsis (grain) were found in flotation samples (phytolith determination was not applied) and only modern intrusive rice husks were recovered (J. Carlos pers. comm. 2010). At present, rice is grown through irrigated fields in the wider Dewil Valley. The macro-botanical dataset for Southeast Asia is still growing and although rice tempered pottery is ubiquitous, rice macro-remains are absent from the Philippines (Castillo and Fuller 2010). Paz (2002: 277) argues that rice grains and husks are robust; therefore, if rice was consumed in association with hearths or combustion areas then macro-remains would most likely survive. Furthermore, no implements to suggest agriculture were excavated at Ille. At Khok Phanom Di, shell knives for harvesting grasses, such as rice, were found deposited in the excavated area (Higham 1993: 177). Therefore, it is unlikely that Ille Cave was used for rice processing.

The development and spread of agriculture and the relationship of rice temper to Austronesian communities is beyond the scope of this thesis. However, the presence of agriculture in the region shows that there was an availability and possibly even a surplus of rice by-products. To be continuously used implies that yield was reliable and consistent. Vincent (2003c: 51) argues that rice-tempered pottery indicates that it was made by potters within an advanced ceramic tradition which developed over a long period under stable conditions. This stable, sedentary society could cultivate rice and

develop a highly developed potting industry as was evident at Khok Phanom Di. The communities who cultivated rice may have been sedentary. As rice production did not take place at Ille but rice tempered pottery was present, this implies that there was a mechanism for distribution, suggesting that some members of that community were in fact mobile or in contact with communities who were.

7.2 The role of ceramics in the mortuary and habitation contexts

Research question 2 asked what role the ceramics played in the mortuary and habitation contexts. Overall, this question contributes towards understanding site use through the function of the pottery. This question further investigates how the ceramics contribute towards establishing a pottery sequence and a typology linked to chronology. The Harris matrix and other evidence were used to tentatively date the ceramics and to understand the role of the pottery.

7.2.1 A domestic ceramic assemblage at Ille?

Since the first excavation season, it was clear that Ille had been used as a cemetery site as four inhumations were excavated (Archaeological Studies Program [ASP] 2005-2006; Hara and Cayron 2001; Lewis *et al.* 2006; Paz and Ronquillo 2004; SEAICE 1999). Further excavations found more complex burial practices and a cremation cemetery was excavated in the early Holocene layers of the site (c.9000-9500 cal BP [8233-8269 to 8754-8829 BC]; Lewis *et al.* 2008). Beneath the cemetery, shell midden deposits dating from the mid-Holocene (c.5000-7000 cal BP [3713-3797 to 5845-5973 BC]) indicated a phase of human habitation and subsistence from the consumption of various species of fresh water/brackish and marine species, animal bones and activities such as hunting, food preparation, discard of food refuse, planing siliceous plant materials and wood (ASP 2007: 21; Kress 2005; Lewis *et al.* 2008: 325). The shell midden deposits overlay burning deposits with intact and disturbed hearth features, numerous burnt and unburnt animal bones, and food refuse remains contribute to further evidence of habitation (Lewis *et al.* 2008; Szabó *et al.* 2004). However, artefacts in the shell middens and hearth layers have been rare and the few earthenware sherds that have been found are most likely intrusive as first noted by

Szabó *et al.* (2004). The Harris matrix shows the depths of disturbance at the site as earthenware and high-fired ceramics occur in deposits dated to the Mid-Holocene (c.5000-7000 cal BP [3713-3797 to 5845-5973 BC]), a period which pre-date ceramics.

No earthenware reference collection exists in northern Palawan, so there is no locally identified or dated material for comparison. Therefore, vessel forms were based on commonly defined categories from the archaeological literature. In terms of pottery function, Solheim (1972: 515) has used vessel nomenclature to signify its function and this has been related to rim form and body type, where traditionally “pots” refer to vessels for cooking and “jars” for storage. However, this terminology is inadequate and needs revising.

Restricted rim vessels – pot/jar	Unrestricted rim vessels
Globular body	Pedestal bowl (with bowl and foot rim)
Carinated body	Bowl (shallow dish)
Cylindrical body	Carinated bowl
Possible burial jar	Plate

Table 7.1 Potential vessel types determined from form elements at Ille Cave

Table 7.1 shows the range of possible vessel forms from the Ille assemblage. There are many limitations with the Ille ceramics because very few almost complete vessels were found. Vessel function, capacity, or size cannot be determined from the small fragments of sherds. Wall thickness of vessels have been used to assess function as well as thermal capacity (PCRG 2010: 19), but without further form elements, wall thickness was not helpful. The interior of the ceramics looked unused. Carbonised food residues were not evident. Although lipid residue analysis has not been carried out to confirm use as storage or cooking pots, and apart from occasional soot staining (from heating or original firing), the vessels do not display evidence of burning from cooking or boiling water. It is unlikely that the red-slipped and painted vessels were used as domestic ceramics as they would have been discoloured during firing or washing and none of the sherds showed signs of such use-wear. Therefore, it is unlikely that the Ille ceramics were a domestic assemblage. However, it is still possible that some of the restricted rim vessels were used for storage or cooking.

No ceramics can be linked to habitation and subsistence activities in the upper layers, but during the cemetery phase, the cave could have occasionally have been used for habitation, campsites or periods of resting (Kress 2006), and pottery pertaining to subsistence might be discarded as part of this activity. The absence of food storage or preparation vessels is not unusual at cemetery sites in Island Southeast Asia. This is the case with the Niah Caves where there are very few examples of vessels for food storage or preparation (Cole 2012: 300).

7.2.2 Ceramic mortuary practices

In the cemetery phase, burials were interred. Although burials were truncated, the base of some of the burials was sufficiently intact to show that pits were dug for burials and skeletons were articulated rather than bones being randomly distributed. The variation in mortuary practice comes in the orientation of the burial, placement of the body (both of which are beyond the scope of this thesis), the addition of red ochre and grave goods and the associated ceramic rituals. Although the site is deeply disturbed, the Harris matrix does however strongly show that the earthenware and high-fired ceramics come from the four burial phases. A mixture of ceramic types occurs in all four burial phases and in non-burial layers and it is likely that the ceramics all occur within the same scale of time. However, an examination of the burials shows that the ceramics were categorically not included in inhumations, neither as grave goods, primary or secondary burial jars, nor by ritual breakage over the burials. Out of 51 burials represented in the East mouth, only 28 have pottery in them and these are always fragmentary pieces that appear mixed and redeposited rather than as graves goods. The same types of pottery occur within the burial fill as they do in non-burial silt and pit layers. In the West mouth, while some earthenware and high-fired ceramics were found in the burial fill, the majority of the earthenware occurs in the deep pits. Where pottery sherds are found in burial fills, it is most likely that the manufacture predates the event of the burial.

Very few burials had artefacts directly associated with them apart from items for personal adornment such as shell, glass and stone beads, metal such as rings, beads,

and blades. There is no evidence of ritual breakage of complete vessels over the burials (or away from the burial) and then interment of the broken sherds with the body. The burials show sealed contexts. It is unlikely that pedestal bowls were used to contain offerings then ritually broken as the ring foot of the pedestal bases are found intact more than the bowl portion which is more fragile. Fragments from the same vessels in the same burial fill context have not been found and it is likely that highly decorated vessels would have been used for ceremonial breakage. However, the majority of broken ceramics in a burial context are small and plain. While this practice has been seen at sites such as Asine, Argolis, Greece (Hellenistic Period) where five vessels were deliberately broken and ritualistically placed in a tomb at the time of burial (Fossey 1985: 22) or in Southeast Asia, such as at Ban Chiang (White 1995: 105) or at the Niah Caves (Cole 2012: 218), ceremonial ceramic breakages are not known in the Philippines. It is likely that the sherds entered the grave fill when they were later disturbed in creating new graves.

In terms of jar burials, although this burial custom is found in the Philippines and in wider Southeast Asia (Andrews and Glover 1986; Colani 1938; Fox 1970; Lloyd-Smith and Cole 2010; Reinecke *et al.* 2002), it is unlikely that a primary or secondary jar burial cemetery was present at Ille. Burial jars have not been found on the surface or buried with rims visible above ground as grave markers. Very few large sherds or rim were found and no sherds were found in association with a density of stray bones to suggest a primary jar burial compared to classic jar burial sites which had full primary inhumations in large vessels. It is possible, however, that any primary jar burials on the surface or floor of the cave platform may have been disturbed, destroyed or removed before excavation.

There are accounts of looted stoneware jars at the entrance of Ille Cave which might have held secondary burials (Paz 2012: 148). Unlike at Ayub Cave or the Tabon Caves (Dizon and Santiago 1996; Fox 1970; Solheim 1972: 515), secondary burials in small restricted rim vessels, with bone or teeth (charred or uncharred), or grave goods such as beads, have not been found. The only complete jarlet found did not have evidence of secondary burial (Eusebio 2006). Bone and teeth were not found in association with

sherds. The only indication that secondary jar burials may have been practiced is from a square lid (see fig. 6.31, Results Chapter 6) which has a parallel at the Tabon Caves. The Tabon square lidded vessel contained painted teeth of more than one individual (Fox 1970: 95). Furthermore, Fox (1970: 73) states that burial jars were usually provided with covers, in the shape of bowls which were plain and decorated. Lids were also sealed to jars with lime or lime and resin. However, no vessels with square mouths have been found, no evidence of resin as seal, and no other square lid has been found at Ille. Any instances of jar burials at Ille do not indicate it was a jar burial cemetery. Therefore, it can be concluded that jar burials were not a mortuary practice of the people who used Ille.

In terms of ceramic function, it is most likely that the unrestricted vessels such as bowls and pedestal bowls were associated with ritual activity for the display (and possibly serving) of food, libation or other offering at ceremonial or social occasions. Votive offerings were deposited on top or adjacent to the burial. However, vessels may have been moved or redistributed, making the direct association of ceramics with individual burials difficult. Pedestal bowls, also known as fruit trays, presentation dishes and footed dishes, were significant in Philippine culture. Bautista (2003: 47) states they are found in nearly every Philippine pottery complex and are believed to have been used primarily as ritual vessels. Bautista (2003: 49) argues that each pottery site has evolved its own unique design. Because of their uniqueness, these dishes are good benchmarks for comparison across different sites. So far it seems that the stamped red-slipped pedestal bowls are unique to Palawan.

The elaborately decorated exteriors, slipping and paint of some of the pedestal bowls point to ritual or presentation rather than domestic use. Therefore, it is highly likely that Ille was a votive offering site, and offerings to ancestors or supernatural forces were part of the mortuary practice. The Tagalog term "*pang-alay*" describes the ancient Filipino practice of using pottery as containers of food offerings placed on the surface of grave sites during burial or during ritual re-visits to the dead (Valdes 2003b: 15). In *mag-aanito* rites (offerings to spirits), special offerings, or *pang-alay*, of perfume, fruits and food were presented through priests and priestesses (*babaylan* or

catalonan) to ask for good health and a bountiful harvest and to ward off illness and misfortune (Valdes 2003b: 13; also Fox 1982; Manuel 1977). In particular, pedestal bowls were ideal for this activity. However, there is no understanding of what happened to the vessels once the caves have been vacated after the mortuary ritual, and then when the caves were returned to, such as whether the pottery were reused.

From a Philippine perspective, Valdes (2003b: 14) argues that although pottery may have been used in daily life, they were imbued with a ritual function by the act of leaving them on the ground to contain offerings of food and drink. As grave goods (*pabaon*) or offertory vessels (*pang-alay*) they were intended to be used or thought to ease the journey of the departed into the afterlife (Valdes 2003b: 14). Barretto (2003b: 70) argues that due to the commonness of earthenware, the role of ceramics in the social integration of a community is at times ignored. Barretto (2003b: 70) states that earthenware vessels are the “embodiment of the community’s life force and represent the spiritual as a means for people to commune with their gods and nature”. However, these actions without ethnography are often hard to access in the archaeological record.

The large high-fired stoneware vessels were most likely tradeware from China and used as storage jars for trade goods or food, drink and sauces to be consumed on their journey to the afterlife (Valdes 1992: 15). No kiln site manufacturing locally made stoneware has yet been found in Palawan. It is possible that once a vessel was traded, the vessel could have been appropriated for other means apart from food/drink storage such as for a burial jar or heirloom piece. Stoneware spouts showing vessels for pouring are also present. Fragments of celadon bowls and plates were also excavated which suggest use as serving vessels and/or used for rituals. High-fired sherds are outnumbered by earthenware vessels. As the high-fired ceramics occur in the upper layers, both in burial fills and in non-burial fills, it is difficult to say with certainty whether they were associated with ritual mortuary practices at Ille. It is unlikely that the high-fired ceramics usurped the role of the earthenware vessels as they had different forms and, therefore, different functions at Ille. The high-fired vessel forms were not replicated in earthenware. It is not possible to know whether

the same people using the earthenware were also those using the tradeware, or involved in the trade.

In summary, it is unlikely that the ceramics at Ille were a domestic assemblage although some vessels may have been used for storage or cooking. In terms of mortuary practices, it is unlikely that ceramics were burial goods, or that vessels were ritually broken over interments, and Ille was not a jar burial site. It is most likely that the pedestal bowls were for ritual offerings of food or libations deposited on top or adjacent to the burial and possibly sometime after the burial. This group of ceramics were put together and offerings made to commemorate the dead. This deliberate choice of placing vessels on top of or adjacent to the interments rather than being placed with the body is also seen at the Niah Caves (Cole 2012: 226). Other ceramic forms may also have been votive offerings to ancestors or supernatural powers, or to help the deceased in the afterlife. This may account for the lack of use-wear evidence on the vessels. Ceramics may have had a special and symbolic significance in the community. The ceramics were a conduit for the offerings. It is the offerings that would have been the most important element, but were perishable, and have not survived (*cf.* Chapter 4 on Roman pottery).

7.2.3 Dating the Ille earthenware

For this thesis, an attempt was made to use AMS radiocarbon dating and OSL to gain an absolute date for the rice tempered ceramics. Unfortunately, this was not successful. At present, dates are based on relative dates from trade items and external factors such as trade with China, rather than any direct dating of the ceramics or from associated burials. Because there are no absolute dates, it is difficult to directly date the ceramics and to postulate which cultural/technological period they would have been used in. Dating the Ille earthenware and attributing it to a period is problematic due to the lack of absolute dates in the upper layer. There are problems with the periods themselves.

When the Neolithic took place and what the Neolithic means in Island Southeast Asia is problematic. The Neolithic has been used as a convenient term for the period 5000 to

2500 years ago (Bacus 2004: 260, 2003), with the earliest Neolithic dates from the Tabon Caves dating to 2680 BC (Fox 1970). Traditionally, the term Neolithic in Island Southeast Asia refers to a change in subsistence economy based on the cultivation of domestic crops and livestock, usually by small scale egalitarian agricultural communities, coupled with new categories of material culture which included polished stone tools, implements for cloth making, and pottery (Lloyd-Smith *et al.* 2013: 255). In the Philippines, the Neolithic is also characterised by shell tools and ornaments. However, this idea of a “Neolithic Package” has been contested in the Philippines. Rice *et al.* (2009) highlight the inherent problems with the traditional Three Age System and ask whether current definitions of the Neolithic of Island Southeast Asia fit in with the evidence from Ille. Distinct Neolithic layers cannot be clearly demonstrated at Ille because nothing is found in securely stratified context, and potentially ‘Neolithic’ artefacts are all from disturbed contexts that are also associated with Metal Age artefacts such as metal and trade beads. A potentially “terminal Palaeolithic/early Neolithic burial” (H. Lewis pers. comm. 2010) based on charcoal has a date of 6494-6677 cal BP ([5469-5485 to 5563-5631 BC] Lewis *et al.* 2008), and has shell tools and ornaments which may match Fox’s (1970) description of an early phase of the Neolithic in Palawan.

Regarding Neolithic pottery in Island Southeast Asia, it has been identified from Neolithic sites and categorised with plain or red-slipped surfaces, incised and stamped decorations, and perforated ring feet (Bellwood 2005: 135). However, the descriptions of designs and surface decoration are the same terminology used for Metal Age pottery espoused by Solheim (1964a, 2002). Therefore, these descriptions are not helpful in distinguishing pottery by period. As discussed, there are further arguments that cord marked paddle impressed ceramics are early or typically Neolithic. However, it is possible that cord marked pottery continued to be made in the Metal Age.

The Metal Age and its exact dating is equally problematic. A precise date for the Metal Age is yet to be determined. Bellwood (1997: 268) takes c.500 BC as an arbitrary starting point, although he does not feel that any metal in the archipelago can be conclusively dated as early as this, however he acknowledges that future research may

push this date closer to 200 BC. He gives an arbitrary termination point at 1000 AD, leaving the archaeology of China trade, Islam, and the Malay sultanates out of consideration. More recent work by Szabó *et al.* (2013) define the Metal Age period from c.2000 to 500 years ago. More specifically with the ceramic data, Cole (2012) places the Early Metal Age at c.AD 800-1200 and Advanced Metal Age at c.AD 1200-1450.

The meaning of what defines the Metal Age is more nuanced. The Metal Age is not clearly defined in Philippine archaeology. It is understood as “the period in the culture history of man [sic] when he began to work the first metal he encountered, experimenting with it and finally utilising the metal in his adaptive way of life” (Dizon 1983: 38). It is acknowledged that the term ‘Metal Age’ refers to the period that begins with the first evidence of copper/bronze artefacts in archaeological contexts and lasts until Chinese trade developed and porcelains were imported. The Metal Age has been subdivided into an ‘Early Metal Age’ from c.700 to 200 BC with copper, bronze and gold artefacts; and the ‘Developed Metal Age’ from c.200 BC to 1000 AD which included iron (Fox 1970: 14-6, 163-6, 172). Across the Philippines, tin, bronze and iron artefacts were found together, therefore, there is no distinction between a Bronze or Iron Age unlike in Mainland Southeast Asia (Dizon 1983: 38). Little is known about the Philippine Metal Age and whether metal was extracted, or if it was manufactured locally as it is only a minor component in assemblages (Jocano 1967). While technologically-based periodisation is used to describe the Metal Age, it also has implications for social organisation and assumed social changes and the rise of complexity, as discussed in Chapter 4. Metal and metal working has been related to incipient social ranking, political centralisation and long-distance trade networks. However, none of these social features have been clearly identified in association with Metal Age assemblages in the Philippines. Barker *et al.* (2013: 361) argue that the ‘Metal Age’ is only a useful term so long as it is not taken to imply that metal necessarily played an important role in the everyday lives of the majority of the population.

Throughout the excavation reports, the earthenware ceramics have been referred to as coming from what is conventionally called the 'Metal period' c.2500 to 1500 years ago, based on its surface decoration (ASP 2005-2006: 29; Paz and Ronquillo 2004: 14-15). The anthropomorphic and zoomorphic sherds from Pacaldero Cave are comparable with finds such as the yawning jar from nearby Leta-leta Cave, the Manunggul jar from the Tabon Caves and the anthropomorphic vessels from Ayub Cave. However, timescales may differ. The idea of a Metal Age 'style' is based on Solheim's classification of three Iron Age pottery complexes; Kalanay, Novaliches and Bau (Solheim 1964a, 2002) along with the arrival of metals in Island Southeast Asia or at least in the Philippines, and it has been used in this way as a convenient chronological marker (Solheim 2003a). Kalanay Cave, Masbate, is considered a type site with iron technology between c.400 and 100 BC (Solheim 1964a: 207-12). The earthenware ceramics represent preeminent examples of surface decoration. The designs are considered diagnostic and typified by scallop decoration, curvilinear scrolls, alternating triangles, paired diagonals, borders and dashes (*cf.* Flavel 2006). The high ring-stand and cut outs of the Novaliches pottery complex are also considered diagnostic. Therefore, ceramics with aspects of these designs, in any combination, have been called "Metal Age" without scrutiny or close examination of context. Although ceramics may be in fact Metal Age, based on the premise of design, the practice of identifying technological period based on decorations and style is inadequate and does not allow for detailed analysis and has hindered the development of pottery studies in the Philippines. As espoused throughout this thesis, style and decoration are not reliable or satisfactory markers for period, people or social organisation.

As established, the earthenware ceramics are likely to come from the burial deposits in the upper layers. It is likely that the upper layers are Metal Age (Paz *et al.* 2011). However, the cemetery was not a focus of the Ille project dating programme, therefore, radiocarbon dates have not been taken from any of the upper deposits. The only objects alluding to dates are coins from Burial Phase A dating from 1994 and 1761. It is most likely the high-fired ceramics came from Burial Phases A and B as their presence start to diminish in Burial Phases C and D. Due to its abundance, it is possible

that the earthenware occurred throughout all Burial Phases and predate the arrival of high-fired ceramics.

From the evidence, this research postulates that the earthenware ceramics date from the Metal Age and not the Neolithic. The Metal Age deposits that the earthenware pottery sherds were recovered from make it unlikely that the pottery date from the Neolithic Age. It is possible that cord marked pottery continued to be made in the Metal Age and that at Ille the cord marked pottery that occurs in the same contexts as other Metal Age ceramics are in fact Metal Age. The earthenware can be cautiously dated though its association with other (mostly traded) material culture (see table 7.2). However, the exact range of dates for associated material culture is not precisely known. Materials thought to be Neolithic and Metal Age occur together in the upper layers. This thesis postulates that the production and use of the Ille earthenware most likely occurred in the Developed or Later Metal Age period which coincided with the Contact Age. An indicator is that the earthenware ceramics occur in deposits with metal artefacts. Metal is found in the upper layers of the site and copper alloy rings and a blade were directly associated with burials. However, it must be acknowledged that as the deposits are not secure, the pottery may pre-date the metal artefacts. Rice agriculture occurs around the same time as the introduction of metal technology (Paz 2002: 281) and, therefore, the rice tempered ceramics may be indicative of the Metal Age. Bead typology has been used as an indicator of period. Microperforated Cut Shell Beads are a feature of the Metal Age and metal drills were used as part of the manufacture process (Basilia 2011). The glass and stone beads give an indication of technological period but also link the assemblage to trade and chronology outside of Palawan. The earliest dated glass bead in the Philippines comes from the Manunggul Cave, Chamber B, within the Tabon Cave Complex and dates to 370-50 BC (Dizon 1988: 151). In Cayron's (2006) examination of glass beads in the Philippines, he gives the range of dates as c.400 BC to 1500 AD (Cayron 2006: 8) which account for Indo-Pacific beads and later Chinese beads. Written accounts narrow the date range further. Zhao Rugua, Chief Customs Officer, Quanzhou Fujian in 1225 AD informs Chinese mariners to exchange coloured glass beads in the Philippines (in Francis 2002: 68). In particular,

the coiled beads date to after 1100 AD and waned by 1450 to 1600 AD (Francis 2002: 77-78).

Material culture	Estimated date/known presence in Palawan	Source
High-fired ceramics	1000 to 1400 AD	Valdes <i>et. al</i> 1992
Indo-Pacific beads	c.400 BC to 1500 AD	Francis 2002; Cayron 2006
Coiled beads	1100 AD (waned by 1450 to 1600 AD)	Francis 2002
Jade	c.500 BC	Fox 1970
Carnelian	c.500-200 BC	Fox 1970
Gold	c.500-300 BC	Fox 1970
Metal	Unknown	-

Table 7.2 Summary of known dates for artefacts which contribute towards dating the Ille ceramics from the upper layers.

It is most likely that the high-fired ceramics are Chinese tradeware. Tradeware ceramics are usually dated to the Contact Age – from Chinese trade in the tenth century to the beginning of European colonialism from the sixteenth century (Valdes *et al.* 1992). The trade of Chinese glass beads coincides with the trade of Chinese stoneware and celadon, and possibly porcelain. Ille reports state the “tradeware” range from tenth century AD to fourteenth century AD. High-fired ceramics is a valid means of dating Metal Age sites and this method has been used in Island Southeast Asia (Szabó *et al.* 2013: 334). The earliest Chinese trade ceramics found in the Philippines dates from *circa* ninth century (Valdes 1992: 17). Dusun jars found at Ille have been dated from the tenth century and identified to the Tang Dynasty (618-907 AD; Valdes 1992: 20-21). Later high-fired ceramics along with the glass beads could date to the Song Dynasty (960-1279 AD). There are few thin high-fired white ceramics which may be porcelain. However, the absence of blue-and-white porcelain means it is unlikely the porcelain was from the Yuan Dynasty (1271-1368 AD) or Ming Dynasty (1368-1644 AD). Therefore, it is possible that the Metal Age and Contact Age periods coincide; that Contact Age high-fired ceramics were deposited within the same timescale as the Metal Age earthenware or in the subsequent period. This has implications for when the Metal Age occurred at Ille Cave.

The Niah Caves are geographically close to Ille Cave and can be used in some instances as a proxy indicator for certain developments. The presence of metals, glass beads, and 'tradeware' ceramics at Niah indicates that the terminal and the latter part of the intermediate earthenware phases can be equated with the Developed Metal Age. Cole (2012: 224) places the transition between Early and Developed Metal Ages at c.1100 AD or later. There are similarities in the Metal Age material culture assemblage at Ille and Niah, although the earthenware ceramic assemblages are different to each other in fabric, form, and decoration. It is possible that traded items reached Ille and Niah during the same period, therefore, the sites and the earthenware ceramics may be coeval.

It is acknowledged that the Metal Age stretches over an "uncomfortably long time span" (Francis 2002: 204) if the Early Metal Age starts from c.700 BC and ends in 1000 AD known as the Developed Metal Age. However, at Ille as at Niah, the Metal Age is likely to occur later. Based on the Dusun jars, the earliest date for the Contact Age and also the Metal Age at Ille would be the tenth century. However, the date of manufacture would be different to the date of use and final deposition if these ceramics were exchanged within the island after initial trading with Chinese mariners, therefore, these high-fired tradewares may have reached northern Palawan later. A later date also agrees with the ninth to tenth century AD dates from Linaminan Site which has similar red-slipped c stamped sherds comparable with Ille (Szabó and Dizon 2007).

A likely date, sometime between c.1000-1100 AD for the Developed or Later Metal Age at Ille Cave, is based on confirmed dating evidence (*cf.* Cole 2012: 224). Therefore, the Metal Age in northern Palawan occurs later than previous Philippine literature suggests and later than at the Tabon Caves (Fox 1970). Cole (2012: 224) argues that the Metal Age occurs much later than the rest of Southeast Asia due to being on the peripheries of regional trade networks, therefore, the means by which Island Southeast Asia becomes Metal Aged is delayed. The Metal Age, or even evidence of trade, might vary at different sites within Palawan Island itself. This later date has implications for periodisation and social organisation. Work for example by Hutterer

(1976, 1977), Bacus (1996a, 1996b, 1997, 1999) and Junker (1990, 1993a, 1993b, 1994a, 1994b, 2000) consider this date to be the cusp of the Protohistoric period and associated with hierarchical chiefdoms and emerging complexity in central Philippines. However, although Ille may be situated in this period, it does not have the evidence for conventional complexity, but society is complex nonetheless (see 7.4.3 below). Absolute dating of the ceramics themselves would give a better idea of date of manufacture or deposition which could form a framework independent of cultural/technological periodisation.

7.2.4 Limitations of the Harris matrix

The intention of constructing and using the Harris matrix was to assess the degree to which stratigraphy could be used to develop a chronology of the ceramics at the site and to understand the site. It was hoped that the matrix would show a clear distribution of ceramic types between the four burial phases and indicate where the high-fired ceramics entered the sequence in order to understand the role the ceramics played in the mortuary and habitation contexts. Furthermore, it was anticipated that the matrix would enable phasing by period to help date the ceramics and understand their role in that period. However, not all pottery could be located within the matrices because not all of the pottery had context numbers recorded. This is an omission that took place in the field, and this information is possibly irrevocably lost.

Unfortunately, due to the disturbed nature of the site and problems with recording made at the time of excavation, there is not a clear stratigraphic sequence and mis-stratified pottery makes it impossible to construct a clearly sequenced ceramic typology. The Harris matrix shows no correlation between vessel form and burial phase or distribution of ceramic types across the stratigraphy. No pottery sequence was discernible because ceramics types were distributed across different layers and the ceramics do not contribute to the phasing of the site. It is likely that the ceramics were deposited throughout the cemetery phase. Furthermore, it is not clear which other material culture the ceramics were associated with. No discernible pattern can be identified across the four burial phases or even spatially within Ille Cave. It is also possible that any Neolithic deposits may have been mixed with Metal Age deposits. It

is likely that the Contact Age occurred at the same time towards the end of the Developed Metal Age but it is not clear when traded items, especially high-fired ceramics, entered Ille, or if earthenware ceramics was superseded by high-fired and tradeware ceramics.

However, the matrix was useful for understanding the proportions of ceramics in terms of which were found in burial fill and outside of burial contexts to determine that the ceramic assemblage did not relate directly to the burials, although it seems more likely that the pottery was used to make offerings on top of the graves. The mixing of ceramic types in the upper layers showed how they might all have been deposited in the same period/timescale, most likely the Metal Age. This work contributes to the understanding of the site formation process in the upper layers. The layers were affected by grave digging in antiquity and the ancient and modern re-digging of the site which disturbed previous burials. It is likely the ceramics were brought to the cave for ritual use/placement on the graves and only entered the ground as they became broken and incorporated with the fill for new graves and redistributed across the site. The following section discusses further ceramic and burial practices in the Dewil Valley and wider El Nido.

7.3 Identifying learning traditions, communities of practice and social processes through ceramic technology

Research question 3 uses the ceramic dataset and theoretical approaches to examine the extent to which ceramic technologies can be used as an indicator of different learning traditions and different communities of practice. Implicit in this question is how can people be identified and what social processes could account for the ceramic variability at Ille Cave. Overall, this research presents an approach of how best to discuss groups of people who are difficult to recover in the archaeological record.

7.3.1 Plurality of people

One of the difficult questions raised in Chapter 4 was how to discuss people or distinctive social groups who cannot be directly identified, and the difficulties of

identifying social organisation when this is not easily recoverable in the archaeological record. Little is known about the people who used Ille Cave and inhabited or moved through the Dewil Valley. This research has tackled this problem by using theoretical frameworks in archaeology for understanding how social groups are evidenced through their manufacture and use of pottery. However, while the theoretical reasoning laid out in Chapter 4 is laudable and uses more sophisticated ways of interpreting material culture, such as by examining micro-processes and technology (rather than style), there were limitations in applying these approaches to the Ille assemblage. This is due to the lack of reference material, such as comparative assemblages, and contextual information from the wider site and valley. However, these approaches have been useful in shaping this research by evaluating technical variability at each stage of the manufacturing process, developing analytical methods allowing the reconstruction of technical procedures, and attempting to assess the social patterns underlying this technical variability (*cf.* Gosselain and Livingstone Smith 1995: 147).

Variability in ceramics has been used as the means of examining how learning traditions were expressed in distinct pottery making methods which can be equated to people and social groups. The ceramic technology shows that there were at least six learning traditions, and three sub-learning traditions (see table 6.16, Results Chapter 6). It is proposed that there are three aspects to learning traditions: that which is determined, that which is imitable, and that which is embedded (fig. 7.1; also Chapter 4).

That which is determined depends on environmental factors which cannot be changed, such as the property and accessibility of resources. Pottery production was to an extent influenced by the environment and the availability of raw materials (*cf.* Arnold 1974, 1975, 1985, 1993, 2005; Matson 1965; Rye 1976). Thus, the treatment of raw materials was a response to their properties. This can be seen in the paste preparation and the ability to manipulate clay, for example with the addition of temper (grog temper, quartz sand, and rice temper at Ille), through the understanding of their

properties. Provenance studies also show geographic range in relation to the distance potters would have travelled for the extraction of raw materials (see 7.3.2).

That which is imitable indicates how potential influence from within the same community or other pottery traditions may affect the production of pottery in terms of copying or adapting decorations or forms, or even fabric processing. Decoration and form are the most obvious attributes for comparison to other ceramics which may demonstrate close relationships or distant levels of relatedness. For example, the ubiquity of the pedestal bowl form or design motifs, like triangles or circles, may be adopted and represents a Southeast Asia-wide shared practice (e.g. Bacus 2003, 2004; Sackett 1977, 1985, 1990; Wiessner 1984, 1985, 1990).

That which is embedded refers to technological traditions that are deeply rooted within wider social relations and practices, possibly imbued with social meaning and potentially more resistant to change (Dietler and Herbich 1998; Dobres 2000; Dornan 2002; Hegmon 1998; Killick 2004; Lemonnier 1989, 1992). Technological practices are embedded as part of practice and part of the *habitus* (Bourdieu 1977, 1990; Giddens 1979). Gestures and motor habits are consciously or unconsciously reproduced as part of a potter's *habitus* and as result of their community of practice. Gosselain (2000: 189) argues that some of these acts are so embedded that they become aspects of micro-phenomena that can remain unnoticed or unarticulated by the potters themselves.

However, the boundaries between the determined, imitable, and embedded are not hard divisions. They can be subject to adaption and change (see dynamic relationships between the concepts in fig. 7.1). Although the raw materials are determined by the environment, clay can be experimented on so that it behaves in different ways, to become a new embedded practice, and the way clays were worked can be copied from other learning traditions which can also, over time, become embedded practice. Actions and practices which are embedded can also change by the adoption of different or new techniques. In order for something to be brought into the embedded, it has to go through a period of being imitable. Furthermore, things which are

unconsciously worked on, can come into the conscious mind, be added to, and then changed to become unconscious again.

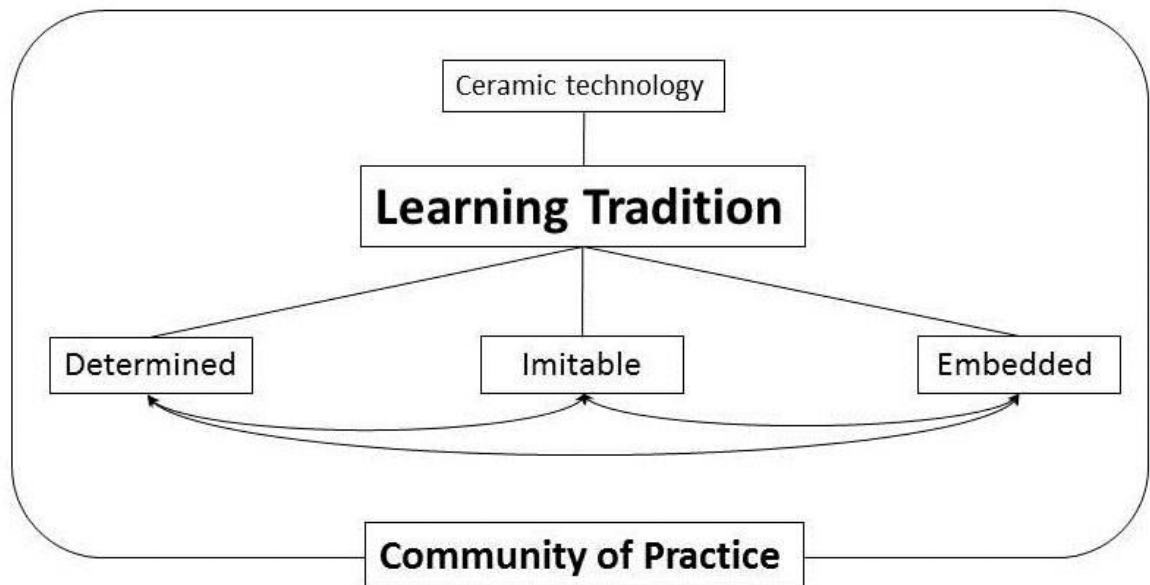


Fig. 7.1 A schematic of how ceramic technology contributes towards the identification of learning traditions. Within learning traditions there are aspects which are ‘determined’ by environmental factors and availability; ‘imitable’ which can be copied or adapted, and ‘embedded’, which are deeply rooted within wider social practices. However, the boundaries between the three are not hard divisions and can become dynamic during periods of change in pottery making practice. These variables go towards the construction of a community of practice (image: Y. Balbaligo)

There are certain mental templates or ‘ceramic ideas’ and pottery attributes that do not mix, that is without any shared practices between certain ceramic types. This shows that there are distinct communities with different practices, with a range of different steps in the *chaîne opératoire*, who did not access each other’s raw materials or use the other’s technique. For example, at Ille, no incised and impressed decorations were found on any Grey Ware, and incised and impressed decorations were never found with paddle impressions. Similarly, paddle impressions never occur with c stamped pottery on Red Ware or on pedestal bowls or any other kind of footed vessel, unlike at Gua Cha, Malaysia (Neolithic Malaya) which had pedestal bowls with paddle impressions on the bowl exterior (Loewenstein 1959). This shows that these are distinct traditions made by different communities of practice. While it is possible that ceramics occurred at different times, it is most likely that the ceramics were

contemporary. In contrast, the burial jar at Guarda Rockshelter, southern Palawan was a red-slipped restricted rim vessel formed by paddle and anvil but with c stamps around the neck (see 7.1.3 above and section 3.7.5, Chapter 3) and represents a completely different type of vessel to the pedestal bowl at Ille and Linaminan. Given the differences in ceramic technology, function and mortuary practices at these sites, it is unlikely that the communities of practice who made/used the c stamped pedestal bowls from Ille and Linaminan were the same communities of practice making/using the c stamped burial jars at Guarda. However, it is possible that there was a shared learning tradition and wider symbolism and meaning, for correlating c stamped motifs on red-slipped ceramics, as part of social customs through mortuary practice in Palawan.

This research exercises caution when trying to directly attribute a learning tradition to a group of people. In this instance, pottery does not directly equate to people or ethnicities, but learning traditions indicate communities of practice. To evaluate whether the learning traditions were local and whether the potters were local, it is necessary to examine the ceramic provenance.

7.3.2 The potential of provenance

The study of ceramic provenance has the potential to locate the geological origins of raw materials and where ceramics were manufactured. This has implications for determining whether the pottery was locally made and, therefore, if the ancient potters were manufacturing pottery close to where it was finally deposited. This is part of the 'determined' aspect of learning traditions. However, accuracy of provenance is only possible with supporting information as locations for clay deposits are not obvious. There are several factors which make provenance determination using the Ille ceramics difficult. The geology of Palawan Island is under-researched. The survey by the Bureau of Mines and Geo-sciences (1981, [Mines and Geosciences Bureau 2010]) covered a wide area but not all areas were fully mapped, therefore, the geological record is incomplete and the areas that were mapped are not detailed enough to be able to use this data for accurate provenancing. The petrography is based on a relatively small number of samples and further comparative samples and petrographic

data from other sites do not exist to supplement provenance analysis. However, the compositional variation of the fabrics shows significant mineralogical variation.

The underlying principle of provenance determination is that the petrography of a ceramic is related to the geology of the raw material source and determined by the local environment. Furthermore, a key assumption is that in most cases ancient potters did not travel significant distances to obtain raw materials. Therefore, production took place close to the exploited natural deposits (Quinn 2013: 117-119). Gosselain and Livingstone Smith (2005: 35; also Gosselain 1992: 564) argue that African potters collected their clay within a 3 km radius from the place where they live and/or practiced their craft. PCRG (2010: 21) advocate investigating the local geological deposits and soils at least 10 km around an excavation site as the majority of pottery was most likely to have been produced within a local or regional production system. Arnold (1985: 39) citing ethnographic data from Masbate, central Philippines, states that the distance to clay source was between 3-4 km for non-canoe distances. However, for coastal or island communities, Arnold (1985: 38) argues that when canoes were used as a means of transportation, raw materials could be moved over greater distances than by foot. This is a possibility in the Philippine archipelago, especially where the terrain is mountainous or there is dense rainforest. Travel by water was possible as canoes or rafts were used to bring finished ceramics to Tubigen Cave, Malapacao Rockshelter and Fernandez Cave within El Nido.

Due to the paucity of geological information, it was not possible to directly provenance the ceramics based on the identification of the inclusions. However, it is possible to state that the raw material for some fabrics could be located in the northern Palawan area. Of the 10 distinct fabrics established through thin section, the results show that Fabrics 1 to 5 have compositional commonalities that have the potential to tie them together geologically to El Nido, northern Palawan, and possibly even the Dewil Valley (table 7.3). For example, the presence of naturally occurring chert, quartz, and iron oxides in Fabrics 1 to 5, and other rock inclusions such as sandstone in Fabrics 3 and 4 match the known geology of the Dewil Valley. Fabric 6 contains chert components which tie it to northern Palawan, but also has volcanic rock inclusions which suggest a

non-local provenance. Hematite and chert occurring together are also found in the fluvial deposits of the Dewil River which are heavily present in some of the fabrics. The inclusions of these fabrics are similar in shape, size, and frequency, and are likely to be from a similar environment if not the same erosional and fluvial system. Although chert sources can be found across northern Palawan, chert is present in the Bacuit Formation where the Dewil Valley is situated.

Fabrics most likely to be local to El Nido	Fabric 1: Grog and chert Fabric 2: Grog, quartz and chert Fabric 3: Sandstone and altered igneous Fabric 4: Grog and quartz Fabric 5: Chert and quartzite
Fabrics possibly local to northern Palawan	Fabric 6: Chert and volcanic rock Fabric 7: Mica and quartz
Fabrics with no indication of provenance	Fabric 8: Grog temper Fabric 9: Rice temper Fabric 10: Coarse quartz temper

Table 7.3 Potential provenance and proximity of Ille fabrics to El Nido

Fabric 7 is compositionally different to Fabrics 1 to 6. Fabric 7 contains quartz, biotite and muscovite mica, suggesting the presence of mica schist. In terms of lithology, the Dewil Valley is located on mica schist which potentially ties the ceramics to the geology of northern Palawan. Fabric 7 does not share the same alluvial sediments, especially the chert found in Fabrics 1 to 6. However, the ceramics may still be local to northern Palawan but could come from a different clay source or drainage basin.

The ‘criterion of abundance’ premise suggests that ceramics strongly represented at a site are likely to be of local manufacture, while scarcely represented ceramics are more likely to be of non-local origin (Bishop *et al.* 1982: 301; Quinn 2013: 119). Although, there are exceptions to this premise, as strong mechanisms for distribution, such as trade, can disseminate ceramics from its original manufacturing centre (for example with Greek and Roman amphorae). Archaeologically, ceramic types made from Fabrics 1 to 7 are the most commonly occurring ceramics in the Ille assemblage. The Ille ceramics were all made with hand fashioned and low-fired techniques that are consistent with small scale production, and in terms of distribution this suggests the

absence of a strong market economy. It is likely that the Ille ceramics were low level local production within the northern Palawan peninsula. Therefore, the majority of Ille earthenware ceramics are most likely to be part of a local pottery tradition.

As there seems to be a local pottery tradition, a question to be asked is what was the relationship between the localisation of raw materials and the localisation of learning traditions? For the locally made ceramics, it is possible that the local materials, such as clay and tempering materials, were processed in a certain way because of the property of the materials. For example, the potters recognised when temper needed to be added to a clay for their forming and firing methods. Some vessels may have needed to have been treated a certain way for ritual purposes, for example with red-slipped vessels, the colour was a product of the manufacturing process but red was selected because it was of part of the aesthetic for mortuary rituals (*cf.* Peralta 2000). These habits and practices were produced and reproduced, consciously or unconsciously, and passed on within the potting community, with the need to understand and adapt technology becoming part of the learning tradition specific to the local area of production. This transmission of knowledge takes place within learning networks, between family members and social groups or even sharing knowledge with other communities of practice. It is also likely that other learning traditions influenced local potting communities at Ille as there are shared forms (such as pedestal bowls) and shared decorations (such as triangular designs) that are replicated across wider Southeast Asia. Thus, is the treatment of raw materials a response to their properties or because of cultural or functional expectations? This idea needs to be examined with a comparative ceramic dataset. Ideally with ceramics from southern Palawan, should the Fox excavated Tabon assemblages become available or with the recent excavations by the National Museum.

Fabrics 8 to 10 are made from different raw materials and are compositionally and technologically different to Fabrics 1 to 7. The fabrics do not contain minerals or rock inclusions to aid provenance. Fabrics 8 and 10 are composed of very fine clay and do not contain the coarse, medium or fine sand sized mineral or rock inclusions, specifically quartz, chert, and iron oxides, found in other fabrics. This indicates that the clay was collected in a different location to the other clays. As the base clays are

different and finer than the other fabrics, the paste was prepared differently with tempering materials of grog, rice and quartz sand temper respectively. It is not possible to provenance Fabrics 8 to 10 based on their petrographic composition, nor is it possible to relate the fabrics to a geological area. Furthermore, the ceramic types made of these fabrics, especially Fabrics 8 and 9, occur in small quantities. Thus, Fabrics 8 to 10 are good candidates for non-local ceramics. This does not necessarily mean that the ceramics are “exotic” (*cf.* Vincent’s use of the term 1998: 8, 2003c: 51) or ‘foreign’, but a non-local provenance is suggested. As Fabrics 8 to 10 are technologically different to the other fabrics, this suggests a different learning tradition carried out by a different community of practice for the preparation of the paste. This indicates a distinct community who produced the ceramics and were also rice producers or who had access to agricultural by-product and who may not be local to Ille Cave.

The presence of rice tempered pottery at the Ille Cave is clearly different technologically and compositionally to the other ceramics excavated. This contributes to the diversity of the ceramic assemblage demonstrating that the learning techniques of temper and paste preparation represents a different community of practice to other groups who used other tempers such as quartz sand or no temper at all. Although rice temper has been used to provenance ceramics in some regions (*cf.* Lippi *et al.* 2011), without evidence for rice producing locations in the region, the rice temper in the sherds are non-diagnostic in terms of provenance. Overall, rice tempered ceramics are rare in the Ille assemblage. In this instance, the ‘criterion of abundance’ can be applied. Thus, the rice tempered fabrics are a good candidate for non-local ceramics. It is evident that Ille Cave was supplied by more than one source of ceramics. The groups of people who deposited their pottery at Ille Cave used or had access to ceramics made with several different clay sources and differing temper technologies. This is significant as it suggests that either more than one community of practice, with distinct learning traditions made use of Ille Cave, or that those using the cave had access to pottery made by several different communities of practice.

As more than one pottery tradition is evident at the site, if the majority of the pottery is locally made based on examination of provenance and the criterion of abundance, and the ceramics are deposited locally at Ille, it is possible that the potters or groups of potters (who constitute the different communities of practice with different learning traditions) were also local to the north Palawan, if not the Dewil Valley area. The potters or different groups of potters may not be the same people as those who carried out the mortuary practices and rituals, but there is a great possibility that they might be the same group of people or share social relations with this group. With the clear distinctions between the Red Ware, especially the red-slipped decorated pedestal bowls, and the more quotidian Grey Ware, it is possible that these two wares were not from the same broad community. However, at present there is a lack of domestic contexts to investigate this. It is also possible that the raw material or finished ceramic types might have been brought by people from elsewhere in the local region or that schematically, the technological template, in terms of fabric treatment, form or decorative technique, were appropriated or adapted from ceramics elsewhere in the area or from further afield. As there are ceramics that do not share the same technological attributes as other ceramics, it is likely that these ceramics point to communities of practice from outside of the local area and suggest different learning traditions outside of the Dewil Valley area. Levels of interaction, if any, between these communities are as yet unknown.

7.3.3 Social processes and mortuary practices

Evidence for pottery production has not been found at Ille Cave or yet in the Dewil Valley. As Ille is a cemetery site and the pottery, especially the pedestal bowls, are votive offerings, it is most likely that Ille was a place of ritual and the pottery was made elsewhere. As the majority of the ceramics were part of a local pottery tradition, it is most likely that the offering of votive ceramics were part of the local mortuary tradition in this period. Jar burials, interment with pottery as grave goods, and ritual breakage were explicitly not part of the local tradition in northern Palawan. This is in contrast with the mortuary and ceramic practices at the Tabon Caves in southern Palawan where these practices were prevalent. Therefore, there is a marked

distinction in the mortuary practices between northern Palawan and southern Palawan.

As there was little evidence of long term subsistence within the cave, it is likely that by the Metal Age, Ille was only a burial and ritual site and people lived elsewhere in the valley, if the community of potters were the same as those using Ille Cave for their mortuary practices. This has implications for understanding the mobility of people at the time and distances travelled. It is possible that people were living in the valley or by the coasts, as hunter-gatherer-fishers, and subsisting from forest foraging, and moving around. Then Ille, and possibly the other cave sites in the valley, were a fixed and familiar point in the landscape and a place to bury their dead, carry out their ritual practices to their ancestors, deities and other supernatural forces. It was a place to continue returning, to make new burials and as a fixed place of ritual remembrance and the remembrance of individuals. The pottery could have been used to present offerings to the dead after initial interment and then again on revisiting with further offerings and even feasting. The disturbance at the site from the process of continuous return, making new burials and disturbing the old burials, and breaking pottery in the process, suggests a lack of continuous commemoration of individuals for the long term, as individual burials were rapidly broken up and displaced to become part of the undifferentiated community of the dead. This burial behaviour does not point to strong hierarchy as although some burials have grave goods, elite burials are not distinct – there are no strong contrasts between ‘rich’ and ‘poor’ graves, which points to a lack of hierarchy at this moment in time. This is discussed further in section 7.4.3. Though few structures in the archaeological record tell us about the social organisation, ideas of heterarchy present a way to explain sociality and differences in learning tradition that can be seen as a wider expression of cultural pluralism in the Dewil Valley and the wider region.

7.4 Comparing the Ille assemblage to ceramics in the Dewil Valley and El Nido

Ille Cave is situated in the Dewil Valley in the municipality of El Nido. The ceramic assemblages of six cave sites in the Dewil Valley were examined along with two sites

on the peninsula and three sites on islands in wider El Nido. Research question 4 asked how can the earthenware ceramics in the Dewil Valley and the El Nido area be compared to the ceramics at Ille Cave. This section also asks a wider question about whether social relationships in El Nido could be assessed and recovered through the ceramic and mortuary record. This question relates to research question 3 about learning traditions and communities of practice at each cave site and possible explanations for ceramic variation.

The ceramics were collected from the surface of the sites (see Appendix B). Although the ceramics may not represent the full range that may be found within that cave, the surface assemblages can be compared directly with the ceramics recovered from the surface of Ille Cave. Stratigraphically, because the ceramics are surface finds and based on the similarities with the Ille assemblage, it is possible that the age of the ceramics are later or equal to the age of Ille and, therefore, part of the Developed Metal Age (from c.1000 AD). Furthermore, traded items at the caves indicate that they were part of the trade/exchange network that took place in the Contact Age.

7.4.1 Type sites and ceramics

No habitation sites have been found in the Dewil Valley. Further excavations at Sibaltan may uncover evidence of coastal habitation by people who might be or might not be related to the communities in the Dewil Valley. In terms of pottery production, the net would need to widen with a need to investigate sites outside of the Dewil Valley for clay sources (between Sibaltan Bay and the tributaries of the Dewil River) and manufacture sites, possibly close to any coastal settlements. The fact that similar ceramic types were found at the Island cave sites suggests interaction with the Dewil Valley communities and that they had access to transport vessels, such as rafts or canoes, for them to transport pottery and their dead for burial.

At this stage, the function and use of the caves remains uncertain. It is difficult to ascertain whether there is a correlation between type of site and ceramic assemblage. The ceramic assemblage along with the surface finds found at each site has contributed towards hypothesising what type of site it was. Table 7.4 shows the

potential type sites. However, caves that are hard to access, for example those that need climbing to, are more likely to contain votive offerings and jar burials, than primary inhumations. Based on the earthenware, sites with pedestal bowls are likely to be votive offering sites. Other ceramic forms might also represent votive vessels. Sites with evidence of large and thick ceramics pieces, especially with large rims and in close proximity to human remains are good candidates for jar burial sites. Although at this stage, it is difficult to be certain whether large primary jar burials or secondary jar burials exist in northern Palawan as they have not been found at Ille and looting may have removed this evidence from other sites.

Potential Type Site	Site	Location
Votive offering	Ille Cave Makangit Cave Idulot Cave Tonio Cave Pacaldero Cave Lagatak Bukana Cave Corong Corong Rockshelter Tubigen Cave Malapacao Rockshelter Fernandez Cave	Dewil Valley Dewil Valley Dewil Valley Dewil Valley Dewil Valley Dewil Valley El Nido Lagen Island Malapacao Island Bukal Island
Jar Burial	Idulot Cave Tonio Cave Pacaldero Cave Fernandez Cave	Dewil Valley Dewil Valley Dewil Valley Bukal Island
Primary inhumation cemetery	Ille Cave Sibaltan Open Site (modern)	Dewil Valley El Nido
Secondary burial	Pacaldero Cave Pasimbahan Cave	Dewil Valley Dewil Valley
Cremation cemetery	Ille Cave	Dewil Valley

Table 7.4 Potential type sites of cave sites and rockshelters in El Nido with ceramics examined in this thesis

It was hypothesised that there was a wide range of variation between the ceramics from the sites surveyed in the Dewil Valley and El Nido which also varied from the Ille assemblage. The analysis of the Dewil and El Nido ceramics demonstrated that there was strong ceramic variation within sites and between sites in terms of fundamental attributes of fabric, form, decorative, and manufacture techniques which build a better understanding of the *chaîne opératoires* and ceramic technology.

There are some sites in particular which have closer ceramic ties or relationships to Ille Cave. In particular, Corong Corong Rockshelter outside of the Dewil Valley near El Nido town proper, c.14 km away over mountainous terrain, has 'Type 8: Incised Triangles' but the vessels appear larger in height, thickness, and larger scale decoration than with the Ille versions. Sherds similar in form, paddle impressing technique and manufacture to Ille 'Type 4: Grey Cord Marked' have been found at Corong Corong Rockshelter and Tubigen Cave on Lagen Island, both outside of the Dewil Valley. Apart from at Ille, this type has not yet been found within the Dewil Valley. This contributes to the argument that Type 4 is a good candidate for a non-local ceramic type.

The Idulot Cave assemblage shares similar but not identical form and decorative techniques and at least one ceramic type (Type 7: Impressed restricted rim) with the Ille assemblage. Both Idulot Cave and Tonio Cave have ceramics similar to each other and both have 'Potential Type 13: Large brown rim' and paddle impressed sherds which are also found at Ille, as with similar types at Fernandez Cave on Bukal Island. From the few sherds from Pasimbahan Cave, they are not directly comparable to Ille but also not unrelated in terms of form and decoration.

There are some ceramics sites which can be considered outliers in that they have little in common with the Ille assemblage. Although the ceramics share the same ubiquitous forms of restricted rim vessels and pedestal bowls, the decorative styles from Makangit Cave are not found in the Ille assemblage even though it is in the Dewil Valley and one of the closest sites and encloses Idulot Cave, which also has a different ceramic assemblage. The shaping technique, the form (size and thickness), and decorative technique of the Makangit pedestal bowls vary significantly from the Ille pedestal bowls, in that there seems to be no relationship with the ceramics, and they could constitute an entirely different pottery tradition pointing to a different social group using the cave or this part of the site could have been in use during a different period. Pacaldero Cave contained the only zoomorphic and anthropomorphic vessels in the Dewil Valley so far. It is possible that this also forms a different pottery tradition with different associated mortuary practices.

These differences represent a range of learning traditions demonstrated between sites and learning traditions different to those established at Ille Cave. However, some ceramic types from Ille have been found at other sites in El Nido and also similarities in technology are found across different sites. This research has proved that there are differences in technological practice between cave sites and Ille Cave, and differences in fabric, indicating that it is likely that raw materials were gathered from different clay sources. Without detailed geological maps, however, it is impossible to pin point the location of clay sources. Therefore, it is not possible to know at this stage whether the ceramics in El Nido are local and if any are 'exotic/foreign'. However, as the majority of the ceramics from Ille have been shown to be local, through petrography and the criterion of abundance, and some ceramics are likely to originate from outside of the local area, it is possible that this is also the case for the ceramics in El Nido where some ceramic clays are sourced from the local area and some ceramics come from elsewhere. This variation is not surprising or unusual if it is examined in context as the cave sites are predominantly mortuary sites, it is, therefore, possible that people were coming from different places in the northern Palawan area to bury their dead or carry out mortuary rituals at the limestone karsts as fixed points in the landscape due to cultural or cosmological reasons

7.4.2 Social and ceramic relationships

Implicit in the study of the Dewil Valley ceramics is a question about what social and ceramic relationships existed between people who used the caves and rockshelters. The discovery of the same ceramic type (Type 8: Incised Triangles) at Ille Cave and Corong Corong Rockshelter, two sites geographically distant from each other, requires consideration. The vessels at the two sites are similar but those at Corong Corong appear bigger with larger proportioned decorations. This may be a modified and localised version of each other, made by the same group of people or by a different community. It is clear that they share the same learning tradition as the decorative technique is the same as is the pointed lip which is unique to this ceramic type. The occurrence of Type 8 suggests two scenarios; the same group of potters were making different sized vessels and used Ille and Corong Corong, and thus were moving across northern Palawan, either over land or around the northern Palawan coast by a water

vessel such as a canoe. It is also possible that this ceramic type represents a shared learning tradition where this type of vessel was adapted by two different groups or communities of practice each using Ille and Corong Corong. Thus, the presence of the same type suggests a degree of interaction between the groups. The difference in size could be the potter's choice based on social/cultural demand or to establish difference between another group's ceramic tradition.

Similar 'Type 4: Grey Cord Marked' ceramics were found at Ille Cave, Corong Corong Rockshelter, and Tubigen Cave. The producers/users of this particular paddle impressed type were either mobile within the Dewil Valley in the northeast, all the way to the western coast by Barangay Corong Corong and by water to Lagen Island. The idea or mental template (in terms of form and decoration) of the vessel was transmitted or the vessels themselves were traded, exchanged or gifted by other communities in the northern Palawan region.

The shared learning traditions across northern Palawan suggests that people moved overland or by water around northern Palawan. The occurrence of c stamped red-slipped vessels in Linaminan Site, central Palawan shows that people, the actual ceramics, or learning traditions themselves, reached far across Palawan. However, at this stage we cannot know if it was the same group of people or whether and how many other groups existed. Although evidence for internal and external trade/exchange is beyond the scope of this thesis (*cf.* Cayron 2012), the occurrences of ceramics, as well as other materials, such as glass and carnelian beads demonstrate that northern Palawan was not an insular society. The deposition of these materials in the Dewil Valley shows that the artefacts either moved with their owners or were traded/exchanged with people within the Dewil Valley area. This has implications for the earthenware ceramics in that there was a definite movement of goods, of which earthenware could have been a commodity for trading/exchanging or gifting as part of social mortuary practices.

7.4.3 A case for cultural pluralism

A concern of this research has been whether an absence of physical/material evidence for hierarchy proves heterarchy or even the lack of hierarchy. However, markers such as cultural pluralism can point to evidence for heterarchy. The El Nido area shows a strong example of cultural pluralism. Cultural pluralism is deemed a pattern of heterarchy (Onsuwan 2003; Onsuwan Eyre 2010; O'Reilly 2001, 2003; White 1995). As discussed in Chapter 4, arguments in Southeast Asia have veered away from hierarchy and teleological models of social organisation (*cf.* Bacus 1996a, 1996b, 1999; Hutterer 1976, 1977; Junker 1990, 1994a, 1994b, 2000). In terms of heterarchy and hierarchy, theoretically there are many differences between them (see table 4.1 showing social and artefactual markers of hierarchy and heterarchy specific to Southeast Asia). However, these concepts as indicators of social organisation can only be assessed through the extant evidence.

In societies that were hierarchical, different behaviours regarding pottery were shown, than in heterarchical societies. For example Bacus (2003, 2004) argues that chiefly alliances showing differences between communities were expressed in terms of ceramic style. Styles of decorated earthenware can be material manifestations of elite alliances and shared identities (Bacus 2003: 39). Although this thesis has attempted to move beyond style as an indicator of people, Bacus' method for identifying chieftains through style in the Dumaguete-Bacong region, central Philippines (*circa* twelfth to sixteenth century), makes it easier to identify groups of people to see how they are producing and consuming their ceramics. In this society, there is clearer social organisation and a trade network for pottery which accounts for the wider distribution of a particular ceramic style. Certain styles were produced within polities where it was used. However, in these instances, there is more evidence from domestic, feasting and ritual context, which is lacking at Ille, to determine how ceramics were used.

As discussed in Chapter 4, cultural pluralism has been evident in Thailand as sites exhibited a high degree of site-to-site variability suggestive of localised cultural differences expressed in material culture, ritual and social practices (White 1995: 105). Specifically, localised variation was evident in ceramic assemblages between Ban Na Di and Ban Chiang some c.20 km apart and coeval. However, these sites provide further

contextual information which allows understanding of the wider production, consumption and distribution within that heterarchical society. This wider contextual information is missing in the Dewil Valley. The only contexts that exist are the caves which point to the ceramics within the funerary practice. Without the wider evidence of habitation, it is unknown what a domestic assemblage might have looked like or what kind of subsistence it allowed. Thai archaeological data are more comprehensive and detailed than current data in the Philippines. Conventional evidence for social complexity such as political centres, settlement evidence, or centralised craft production was not evident in the Dewil Valley or wider El Nido. It is clear that the data does not show presence of hierarchical structure in the Dewil Valley. The absence of hierarchical markers, such as elite burials or permanent dwellings in this area, points to a society that did not invest in the material culture to express and permanently structure hierarchy.

In terms of the more specific question of how social difference manifests in pottery-making and consumption, an examination of the pottery shows there is lack of evidence for the differentiation of elite burials or elite feasting activities. Although some of the more intricate ceramics required higher investment in materials and labour (such as with 'Type 1', the red-slipped, intricately decorated and stamped pedestal bowls), this may not be restricted to a specific group of people. Within a heterarchical system, cultural pluralism as a trait is the strongest indicator of heterarchy. In the context of pottery making, the clearest difference is in pottery technology. This demonstrates the plurality of pottery practice by different groups in a non-centralised and non-hierarchical society.

The variation demonstrated in the ceramic assemblage at Ille, and the differences between ceramic assemblages within the Dewil Valley and in wider El Nido, can also be explained as cultural pluralism. The difference is seen in production process and less so in the finished product themselves. But the analysis of the *chaîne opératoire* and the technological processes has revealed differences in the learning traditions and how different communities of practice respond to factors that might be determined by environment or traits which are available to copy from other communities of practice.

It is the ceramics themselves that provide the evidence for cultural pluralism and thus heterarchy. The results strongly highlighted the difference in technology which can be clearly grouped by learning traditions and thus attributed to different communities of practice.

The variation has been discussed in terms of different learning traditions and different communities of practice. These groups of people may have existed as separate groups with distinct ceramic practices, and social and mortuary rituals, who shared the landscape interacting with each other and with people from further afield, showing that the societies were not insular. Ceramics were localised variations of shared ceramic templates or ideas and modified according to local needs. Not just from within the northern Palawan area but reproducing wider Southeast Asian ideas in pottery and mortuary practice with localised variation. It is likely that learning traditions from outside of Palawan Island were disseminated by local potting communities at Ille as there are shared forms (such as pedestal bowls) for offerings and shared decorations (such as triangular or circular designs) that are replicated across wider Southeast Asia.

The wider tradition shows that there was social interaction. People were moving, there was water based transport, as well as levels of intra-, inter-, and extra-island exchange. Rather than centralised craft production and a strong market economy, there were local as well as non-local communities of practice with distinct learning traditions. These societies should be considered as a complex heterarchy. Cultural pluralism is a part of Southeast Asian practice. It appears on a small scale as opposed to the grand narratives discussed in section 7.5. People in these discussions are small autonomous communities as opposed to the “faceless blobs” (*cf.* Tringham 1991: 94; Dobres and Robb 2000) of migrating groups as envisaged by Solheim, Bellwood *et al.*

By emphasising the material outputs of the communities at Ille, regardless of whether the manufacture of pottery or shell artefacts are examined, this allows us to get behind the processes of manufacture to look at social elements. This research considers that the communities of practice who used Ille were unranked, as their ceramics existed side by side in (an albeit disturbed) burial cave, performed through the same kind of funerary practice. Therefore in terms of consumption, there was

parity in practice but diversity in pottery expression. All the practices by the communities were the same through the deposition of votive offerings. This was part of the practice in the Dewil Valley but was also a part of the Southeast Asian culture in this time and period. It is these communities who used Ille Cave that comprised the society of the Dewil Valley. Heterarchy presumes unranked or many ranked system of social organisation (*cf.* Crumley 1995: 2). Furthermore, a range of distinct social rankings, for example based on age, skills, political or ritual roles, *etc.* may not be marked by great distinctions in material culture/wealth, thus fostering the idea of heterarchy. This research has demonstrated how the society can be conceived of as socially organised in terms of heterarchy – therefore specific practices, in terms of pottery production and especially the consumption of ceramics in a funerary context are traits of this heterarchical society.

It is impossible and unnecessary to impose restrictive typologies of societies to the scant data collected so far in the Philippines or to try to fit Philippine data to western assumptions of complexity (*cf.* Bacus 1996a, 1996b, 1999; Hutterer 1976; Hutterer and MacDonald 1982; Junker 1990, 2000). There has been a trend towards heterarchy in Philippine archaeology (Barretto-Tesoro 2007, 2008; Mijares 2003) and heterarchical models both offer a critique of the assumptions about the social evolution of strongly hierarchical chiefdoms, especially during the Protohistoric/early Contact Period, and a better fit for Southeast Asia and the Philippines in particular.

In summary, the Dewil Valley was inhabited by more than one community. The range of ceramics found at Ille Cave and the Dewil Valley were mostly locally produced and the caves were potentially used by multiple communities with different ceramic traditions. The variability in ceramics coupled with the mortuary practices at Ille Cave was an expression of a group's social complexity and cultural identity. The ceramic record of the cave is inevitably a record of social practices. The pottery distribution in the Dewil Valley can be attributed to cultural pluralism as part of the heterarchical approach to account for the diversity of culture in small locales. White (1995: 105) has said that the variability seen in Thailand is "unexpected". A question to ask is whether the variation in ceramics in northern Palawan is also unexpected. The variation within

one small cave site and within a certain scale of time, such as Ille, may indeed be unexpected. However, variability in ceramic assemblage is a practice found in Palawan, not just within the northern Palawan region but with the Tabon Caves in southern Palawan there are many pottery types, and a range of burial traditions and mortuary practices. The distinct regionalism seen in northern Palawan may be one of the reasons why there is still no broadly agreed upon ceramic typology and thus why it has been difficult to compare Ille with other assemblages. However, the following section examines how Ille assemblage fits into what is known about pre-existing pottery traditions in the Philippines.

7.5 The Ille assemblage in the context of Philippine archaeological ceramics

Research question 5 asked how does the Ille earthenware assemblage fit into prior research on pottery traditions in the Philippines. Chapter 2 discussed the dominant models for regional pottery styles in Southeast Asia; the Sa Huynh-Kalanay pottery tradition and the pottery associated with the Austronesian expansion. This question is partly addressed in 7.1.3 which talks about the ceramic narratives for Red Ware, decoration styles, and paddle impressed pottery which comprises the attributes of the ceramics. This question expands on these themes further by putting these ceramic narratives into context and asking whether there is a relationship between the Ille ceramics and these pottery complexes.

As demonstrated, the Red Ware and red-slipped ceramics have a strong ceramic narrative in the Ille assemblage and a strong connection to ceramics in Southeast Asia as Red Ware and red-slip have been found across the region (see Chapter 2). Works by Bellwood (1997, 2005) equate red-slipped pottery with the expansion of Austronesian communities. However, because the Red Ware at Ille may be Metal Age and later than the original Neolithic Austronesian expansion, it is not possible to assess whether the red-slipped ceramics are related to, or successors of, the Austronesian dispersal. Furthermore, although pottery is evident at Ille, it cannot be tied to polished stone tools and agriculture which were other markers of the 'Neolithic Package' associated with the Austronesians. Overall, it is difficult to associate any Red Ware and red-

slipped ceramics found in Southeast Asia to Austronesian language speaking people and it is difficult to use pottery as evidence. Swete Kelly (2008) studied pottery assemblages from contemporary sites in the Cagayan Valley, Dimolit Site, and the Batanes Islands, the Philippines and Huakanshan and Peinan Sites, East Coast of Taiwan which were thought to be areas where the dispersal of Austronesian languages along with peoples and their culture package must have occurred (Swete Kelly 2008: ix). While a clear Red-type Pottery Horizon was present at these sites, the pottery evidence showed “no directionality extending southwards from Taiwan” and thence throughout Island Southeast Asia and the Pacific (Swete Kelly 2008: 549). Furthermore, “when the available dates for early pottery are examined on their own, there is no evident cline emanating from Taiwan” (Swete Kelly 2008: 539). The pottery does not clearly support of the ‘Out of Taiwan’ hypothesis and Swete Kelly (2008: 549) concludes that the assumed link between red-slipped pottery and the Austronesian language speakers should be “decoupled”.

Solheim has been critical of the dominant Austronesian dispersal model, however, Solheim’s Nusantara hypothesis has in turn has been rejected by many archaeologists in the region (*cf.* Paz 2006: viii). During the course of Solheim’s research, he did see similarities in material culture across Asia and formulated the Nusantara Hypothesis of Maritime Trade and Communication. It is through this network that he hypothesises the diverse Sa Huynh-Kalanay pottery, or at least its decorative motifs, were distributed from eastern coastal Mainland Southeast Asia to Island Southeast Asia from c.500 BC to 1000 AD. While the idea of associating similar pottery traditions from Sa Huynh, southern Vietnam, to Kalanay, the central Philippines is a laudable attempt to show relatedness and relationship, there are many problems with the Nusantara model and the concept of a Sa Huynh-Kalanay pottery tradition when he tries to force all pottery from Southeast Asia into one proverbial mould.

It is not the aim of the thesis to deconstruct the models, but to show how his work has shaped discourse. Solheim’s (1964a, 2002) primary diagnostic indicators for Sa Huynh-Kalanay pottery were based on design. In analysing the decorative repertoire, Flavel (2006) identifies at least 51 Sa Huynh-Kalanay decorative elements from South

Sulawesi, Indonesia (see designs and motifs in fig. 2.1, Chapter 2). In examining the evidence, it is concluded that the Ille assemblage does not have a direct relationship with the Sa Huynh-Kalanay pottery tradition. The Ille earthenware does not have the diagnostic incised and impressed style traits associated with the Sa Huynh-Kalanay pottery tradition. For example, the curvilinear scrolls, rectilinear scrolls, impressed or carved scallop decorations, crenelations, herring bones, zoomorphs, and carved cut ring stands are not present in the Ille decorated assemblage. Furthermore, the dominant patterns and styles from Ille do not occur in the Sa Huynh-Kalanay decoration types, such as the c stamps on the red-slipped vessels (Balbaligo 2010a). Although the c stamps are clearly visually different to circle stamps and the tool is prepared in a different way, as discussed, these red-slipped vessels may have some level of relatedness. However, the circle stamps do not appear as a motif in his 1964 and 2002 works, and while Solheim (2006: 108) acknowledges that red-slipped and impressed circles predate the Sa Huynh-Kalanay pottery tradition, he does not ask whether Red Ware and red-slipped (which also has fabric implications) is in fact Sa Huynh-Kalanay, but “logically” assumes “the decorative form to belong to the tradition” (Solheim 2006: 108) and this is problematic. Solheim believed that the c stamps were related to the Sa Huynh-Kalanay pottery tradition (B. Solheim pers. comm. 2009) and assumed so by the Ille Project Team and perpetuated, but this is not the case. Solheim (2002: 206) also claims cord, vine, and basket bound paddle impressed pottery to be Sa Huynh-Kalanay, even though these techniques predate the notion of the Sa Huynh-Kalanay pottery tradition and these styles were ubiquitous in Southeast Asia.

Solheim’s (1959a, 1959b, 1964b, 2002, 2006) understanding of Sa Huynh-Kalanay vessels was that they were used exclusively in ceremonial contexts, as containers of votive offerings of special foods and liquids at burial sites and Sa Huynh-Kalanay sites were considered to be burial sites containing jar burials. However, as demonstrated above, Ille Cave is not a jar burial cemetery, and it does not contain Sa Huynh-Kalanay pottery; therefore, it is highly unlikely that Ille Cave was a Sa Huynh-Kalanay site.

As discussed, generic decorations, such as horizontal band and triangles, are a feature of wider Southeast Asia ceramic decoration but not necessarily tied to the Sa Huynh-Kalanay pottery tradition or Nusantara sailors. However, as shown in the results chapter (in the 'Decorated No Types'), there are a few sherds which have some similarities to vessels excavated at Kalanay Cave, Masbate, central Philippines by Solheim (e.g. Solheim 2002: 35) and Sasak Rockshelter, central Palawan by Fox (1970: 170). Therefore, it is possible that people who used Kalanay Cave (also a mortuary site) and Sasak Rockshelter had social networks that extended across the central Philippines, or the ceramics themselves, or the decorative idea travelled to Ille Cave. The amount of these sherds in the assemblage is negligible. However, these sherds clearly show that there was a separate learning tradition to the six learning traditions already discussed in Ille assemblage, and it appears that Kalanay/Sasak vessels did not have an influence on pottery design, as the decorations are not replicated onto any other Ille vessel. Therefore, the sherds which have a semblance to the Kalanay ceramics show that the makers constitute a different community of practice than the other more dominant communities found at Ille.

It is true that there are similarities in decoration across Southeast Asia but it is too simplistic to say that all Southeast Asian ceramics are Sa Huynh-Kalanay. 'Sa Huynh-Kalanay' is too wide a description and is not a useful term. The assimilation of circle stamps, paddled pottery and all decorative icons into the Sa Huynh-Kalanay pottery tradition is vastly problematic. Solheim's predilection for subsuming all decorative styles and techniques into a single pottery complex does not allow nuance between ceramics types and between sites. The Ille assemblage demonstrates that while there are local understandings of wider traditions, the specific collection of raw materials, how clays are processed and the *chaîne opératoire* show there are specific learning traditions that get lost and become invisible if all ceramics are subsumed into a single over-arching pottery tradition. As discussed, basing a pottery tradition mostly on decoration has its weaknesses if it does not also examine the context of fabric, forming, firing, and other manufacturing processes. Decoration is imitable; it is easily adoptable, adaptable and subject to change.

In terms of how the Ille earthenware assemblage fits into pre-existing pottery traditions in the Philippines, to date, a wider pottery tradition which might encompass the Ille assemblage and the ceramics from El Nido, has not yet been excavated. The Ille assemblage does not have a direct relationship with the Sa Huynh-Kalanay pottery tradition. However, ceramic narratives of the various pottery types within the assemblage show that the ceramics relationships go beyond Sa Huynh-Kalanay. As demonstrated, it has relationships with other pottery traditions in the region. This shows the variation and richness of the assemblage, the diversity of communities using the site, that the Ille assemblage was indeed part of a wider tradition and that it was part of a shared network. Overall, this research has not examined surface decoration as a visual and aesthetic component of the ceramics but as part of the *chaîne opératoire* and the implications of decorative technique as an action. Previous methods and models for analysing pottery are outdated and there is a need to go beyond style and surface decoration as an indicator of people and practice.

7.6 Summary: The Ille ceramics in the context of wider Southeast Asia

This research has aimed to demonstrate how the analysis of the ceramic assemblage from Ille Cave and wider El Nido can advance debates about pottery traditions and wider Southeast Asia. This thesis has addressed what the Ille ceramics have told us about its place in the broader regional landscape and how this research can contribute, as well as advance, the debates in the study of pottery in Southeast Asia, specifically through pottery technology. The previous section has demonstrated how the Ille assemblage does not fit easily into the current grand narratives of Southeast Asia and that by considering Southeast Asian ceramics as Austronesian or Nusantara, ceramic differences are lost. Grand narratives are unsatisfactory and do not account for the variability and increasing complexity of the regional archaeological record. Therefore, research must move beyond and change these debates.

To reiterate, this research has posited two suggestions for understanding people and social organisation. Instead of discussing pottery as the output of groups of people, this research has regarded the differences in ceramics as the product of different

learning traditions which are maintained and developed within communities of practice. These communities of practice may have had long range connections as evidenced by the similarities with ceramics in wider Southeast Asia and other material culture. The Ille ceramics do not contribute evidence for migration or movements of people, and there are no indicators for the direct movement of pottery or the mental templates which help construct pottery. However, there are ceramic narratives present that relate to practices in wider Southeast Asia. This is not an indication of direct contact but shows that regional connections were in place. Furthermore, the lack of hierarchy does not indicate lack of complexity. Although evidence for strong social organisation or what is considered conventional social complexity is scant, this research has proposed that these societies be considered a complex heterarchy. These people interacted in wider Southeast Asia but returned to the same fixed place to commemorate their dead with intricate mortuary practices which involved votive vessels and pottery which contained offerings. The ceramic technology provides evidence of cultural pluralism and diversity. These societies should be considered complex entities and this could be applicable to other Southeast Asian societies.

This thesis has demonstrated how ceramic analysis and typologies in the Philippines, as well as in wider Southeast Asia, have been based on surface decoration, in particular incised and impressed decorations. Decoration has been useful for providing a comparative dataset as it shows there are shared decorative practices which might imply heritable continuities. But the icons and motifs were ubiquitous and shared across an extremely wide region, therefore, analysis needs to go deeper and beyond aesthetic patterning. This research has accepted, to some extent, Solheim's premises by looking at ceramics through the lens of 'pottery traditions' and 'pottery complexes', but acknowledges the need to break away from merely describing decoration and form, as has been traditionally done, to trying to understand the practice of potters. This research addressed this question through the methodology which examined ceramic attributes in detail and looked for relationships and correlations between the attributes. These attributes contribute to understanding the learning traditions through which pottery technology was maintained and developed.

As discussed in Chapter 4, and has been espoused throughout this thesis, style and decoration are not reliable or satisfactory markers for period, people, or social organisation. This thesis argues that technology, rather than style or decoration, is a better indicator of people, social practice, and as an expression of identity. While it is useful to be able to visually compare decorations and styles across wide areas, decoration should instead be considered in terms of decorative techniques as part of the *chaîne opératoire* (cf. Lechtman 1977). The decorative process shows an action which was carried out with purpose and intent, and which shows either individual choice or a variation of choices from within the potter's *habitus*. Decoration is a non-essential ceramic attribute (cf. table 6.12, Results Chapter 6) and technological style is more resistant to change than stylistic variations which do not significantly alter the manufacturing process (Stark *et al.* 1998: 212). Decoration is imitable, adaptable, and can be subject to conscious or unconscious imitation or manipulation, in response to contacts with other individuals, new fashions, economic concerns, innovation or other influences (Gosselain 2000: 193).

It is the technology and production, including the pre-production, of the whole ceramic that needs to be considered in its entirety, as well as what might be an embedded part of the learning tradition, rather than something that can be copied or imitated. Technology is not just the process of making things but encompasses its social component. Technology is a product of social practice and it is this social component which allows archaeologists to access people, communities, and their social practice and wider interaction through pottery (cf. Dobres 2000). Technologies are meaningful acts of social engagements with the material world and express world views (Dobres 2000: 96-97), it is also the locus of stylistic expression (Gosselain 1992: 559); and the practice of a technique is itself a statement about identity (Ingold 1993: 438). Thus, learning traditions were also an expression of a group's social identity. However, there are limitations with assessing identity at Ille due to the paucity of supporting information and material culture. It is not the intention of this research to match one learning tradition or technological practice to a specific identity, as a marker of people, but to highlight differentiation as a means of identifying multiple identities at Ille.

The variety of ceramics at Ille can be seen as a community of practice's response to the wider world in Southeast Asia as a means of representing their identity. Similarities to ceramics in wider Southeast Asia show connections outside of the archipelago. However, the variation within the ceramics shows that in addition to a small amount of ceramics being brought to Ille Cave from further afield, there is considerable localism with modifications of pottery according to local needs. Within the Dewil Valley there were many differences in ceramics as well as cave use within one small region. This parallels many sites in Southeast Asia, as discussed, which show distinct regionalism and makes cultural pluralism possible. Cultural pluralism and plural identities are defining characteristics of Southeast Asia. In terms of grand narratives, they have been useful as a starting point for the examination of regional patterns. However, attentions need to turn to what is happening locally in order to reconstruct a narrative that is more nuanced, and to understand how different regions have influenced each other. It is not the intention of this thesis to contribute to the grand narratives as this research examines one small area. This thesis critiques the regional models and contributes a local and more nuanced 'story' that needs to be investigated in other areas in order to achieve a fuller representation of interaction and social practice in Southeast Asia. Overall, this research advocates the need to think holistically about ceramics, from its technology, production, and pre-production, including its social context. This research has presented a methodology and Ille Cave as a case study for examining the entirety of a ceramic object within a complex and multifaceted archaeological site.

8. Local Communities and Regional Connections: Summary and Conclusions

This research has used ceramic analysis to investigate variations in technological practices in the Ille earthenware assemblage and the ceramic assemblages in the wider Dewil Valley and El Nido, the Philippines. The central aim of this thesis has been to identify how differences in ceramic technology suggest distinct learning traditions and communities of practice and to examine the relationships with pottery traditions previously reported for wider Southeast Asia. It has been the premise of this research that the variation in ceramics could be classified, thus showing evidence for difference across the assemblage. The ceramics have been used as a means to understand the people who used Ille Cave as a mortuary site, and this contributes to the understanding of social processes and practices in the ancient lives of people in northern Palawan. The work presented has necessarily been located within the current state of Philippine archaeology, and it is hoped that the research methods, data recording and interpretations presented here will continue to be developed, given the continually improving standards of Philippine research. The previous discussion in Chapter 7 answered all the research questions posed in Chapter 1. This chapter considers the implications of those findings and the potential for future research.

8.1 Summary of findings

This research used a variety of methods to examine the ceramic attributes of fabric, form, and decoration, to understand the range of steps in different *chaîne opératoires*, with a view to identifying difference in technological practice. The correlating ceramic attributes were grouped together and wares and types were defined. Certain wares and types had specific ceramic narratives attached to them which told a story about their technological process and relationship to ceramic traditions in wider Southeast

Asia. In particular, the Red Ware, Grey Ware, cord marked and decorated pottery, and rice tempered ceramics showed strong relationships to other ceramics types. Although it was demonstrated that the majority of the assemblage was locally made, the ceramic technology was part of a wider tradition with evidence of interaction between potters and pots in wider Southeast Asia.

An examination of the Harris matrix and material evidence from Ille Cave established that despite the site disturbance, the earthenware and high-fired ceramics were associated with the upper cemetery layers of the site and it was suggested that the vessels were used as votive offerings as a part of the mortuary practices but post burial. Pedestal bowls were most likely a conduit for ritual offerings of food or libations placed on top of, or adjacent to, the burial to commemorate the dead. It was unlikely that the ceramics were used as jar burials, grave goods buried directly with the dead, or for ritual breakage over the burial. The evidence suggests it is unlikely that there was permanent habitation in the upper layers. The ceramics do not display evidence of use-wear, although the ceramics could have been used for storage or food preparation, e.g. when preparing offerings.

The dating of the ceramics was problematic due to lack of absolute dates for the upper layers. Based on association with metal artefacts, trade items (e.g. high-fired ceramics, glass and stone beads), rice agriculture and the Microperforated Cut Shell Beads (which are associated with the Metal Age); the production and use of the Ille earthenware most likely occurred in the Metal Age period leading into the Contact Age. A date between c.1000-1100 AD for the Developed or Later Metal Age at Ille Cave seems likely. It is suggested that the Metal Age in northern Palawan may occur later than previous Philippine literature hypothesised, due to the islands being on the peripheries of regional trade networks, but secure dating is urgently needed.

This research has presented the problem of how to discuss people or distinctive social groups who cannot be directly identified and the difficulties of identifying social organisation when the absence of occupation sites or visible hierarchies means this is less evident in the archaeological record. This thesis proposed that rather than

identifying specific groups of people, it was more prudent to conceptualise different groups of people as different communities of practice who can be identified by learning traditions. Communities of practice also looks beyond the making of the pottery to discuss how people were using and acquiring the pottery, within the funerary rituals, which are complex and nuanced, rather than using the traditional concept of pottery as indices of cultural units. The differences in ceramic technology were identified as the indicator of distinct learning traditions.

It is the examination of the ceramics at the technological level that has allowed the scrutiny of the *chaîne opératoire* and shows the technological complexities of the ceramic types and how they were produced by their community. A breakdown of the *chaîne opératoire* shows what learning traditions are observable at different stages of the production process. Table 6.14 (Results Chapter 6) illustrates three ceramic types with different correlating attributes. It demonstrated that there are inevitable steps in the ceramic production which are shared across all types. These are essential processes common to most hand fashioned low fired earthenware, such as gathering and preparing the clay, or drying the vessel. However, there are clearly certain stages where differences between types occurred. This shows specific differences in practice of the communities. This is evident in the tempering stages where different tempers were collected and prepared (e.g. grog, rice or quartz sand). These actions may be a response to the properties of the clay but also become embedded parts of a community's practice.

Another aspect which may determine a learning tradition is in the surface finish of a vessel. Decorative technique may strongly demonstrate a group's identity, not just through the visual decoration left on the exterior of the vessel, but in the actions and motor habit in the practice of decorating and finishing a vessel. This research has not examined surface decoration as a visual and aesthetic component of the ceramics but as part of the *chaîne opératoire* and decorative technique as an intentional action. This thesis sought to challenge the pre-existing paradigms about what is known about pottery in the Philippines and advance the debates in the study of pottery and Southeast Asia. This was done by advocating that technology, rather than style or

decoration, is a better indicator of people, social practice, and as an expression of identity. Decoration is a non-essential attribute that is imitable, adaptable and superficial. Technology was an embedded part of the learning tradition which includes the production and pre-production process as well as the decoration and firing. There are some differences in firing practices, this is due to the properties of the clay, where specific ceramics types need to be fired in a certain way but this is also a cultural practice of how the ceramics were made.

Technology is not just the process of making things but encompasses a social component as the production of ceramics are acts of meaningful engagement and the variation can be seen as a community of practice's response to their participation in the wider world of Southeast Asia. It is these technological processes that create the material culture. However, material culture is not just about artefacts themselves, but demonstrates the social dimension with people, either as individuals or communities, and how they interact with their objects. The ceramic assemblage shows very specific ceramic practices, with interactions from the creation of the pot to its usage and distribution (though this may constitute a completely different community of practice see 7.3.2). The interaction with the ceramics shows their social practices, and within the context of the cave, this shows their funerary practice in the deposition of votive offerings (or *pang-alay*).

A 'learning tradition' encapsulates the whole process of making pottery and the 'learning network' potentially shows different social groups. This research has demonstrated how there were at least six learning traditions (and at a further three sub-learning traditions) at Ille which may correspond to different communities of practice. In addition to highlighting different communities of practice, it is possible to state categorically that some pottery types were not made by the same people and different groups of people were represented as can be seen in the vast differences in the technology and final ceramic product. For example, impressed c stamps and incised triangular decorations (Type 1) when compared to paddle impressed decorations (Type 4) strongly demonstrates different learning traditions. This decorative aspect, when coupled with correlating attributes of fabric, form and firing

which contributes towards the construction of a ceramic type, points to strong evidence for different communities of practice as well as different groups of people. Although timescales cannot be assured due to the disturbance at Ille, there likely that there are marked social and functional significance for these two types of pottery. The collecting and processing of clay are so different, both have different forming and finishing techniques and there are absolutely no commonalities between the two types and no mixing of the techniques (see 7.3.1).

These ceramics were expressions of a group's identity and consequently, the use of pottery contributes towards their mortuary rituals and practices. Ille, and possibly the other caves sites in the Dewil Valley, were a fixed and familiar point in the landscape, a place to bury their dead, and a place to carry out ritual practices for their ancestors, deities or other supernatural forces. This research also demonstrated how there were differences in technological practice between the ceramics at sites within El Nido and to those established at Ille Cave, indicating further distinct learning traditions. It is likely that this variation occurs as part of localised pottery production, adapted from variations within local production techniques, new potters moving into the area, or the imitation of pottery brought in from wider Southeast Asia. Although a weakness of the communities of practice approach is that it cannot identify relationships between groups (*cf.* Cole 2012), the El Nido area shows a strong example of cultural pluralism, which is a feature of heterarchy. Evidence of strong social organisation or hierarchy is absent in El Nido. However, the evidence shows social interaction, people were mobile, there was water based transport, as well as levels of intra-, inter- and extra-island trade. In the place of centralised craft production and a strong market economy were local as well as non-local communities of practice with distinct learning traditions. Therefore, these societies should be considered complex heterarchies. Cultural pluralism appears on a small scale as opposed to the grand narratives and models of human movement imposed on Southeast Asia which have dominated archaeological discourse, such as the Austronesian Expansion and the Nusantara Hypothesis of Maritime Trade and Communication which distributed the Sa Huynh-Kalanay pottery tradition.

This research demonstrates Ille Cave's place in the broader regional landscape and that although there are ceramic narratives which connect the Ille earthenware to ceramic traditions in wider Southeast Asia, it is not possible to assess whether the Ille ceramics were related to or successors of Austronesian pottery. It is unlikely that there was a direct relationship with the Sa Huynh-Kalanay pottery tradition and Ille Cave is not a Sa Huynh-Kalanay site. The previous methods for examining pottery, based predominantly on design and decoration, has been proved to be inadequate, and variability and nuance in pottery assemblages are lost if other ceramic attributes are not examined together and if all ceramics are subsumed into a single overarching pottery tradition. Furthermore, 'Sa Huynh-Kalanay' is too wide a description and is not a useful term. Therefore, it is neither useful nor meaningful to attempt to assimilate the Ille ceramics into these overly generalising pottery models.

8.2 Contribution and implications of research

Knowledge about the archaeology of the Philippines is still developing. Although there has been a long tradition of pottery studies in the Philippines, the pottery data has been shaped to fit a research agenda tied to migration theories. Investigations on the Tabon Caves in southern Palawan since the 1960s furnished understanding from the Palaeolithic, but until the late 1990s, little was known about northern Palawan. The Tabon Caves ceramic assemblages were not available for examination and there were no comparative ceramics or thin sections available. This research contributes to the understanding of the ceramics and the site, but also challenges the existing models of how ceramics are studied. By researching the technological processes of pottery production, this thesis has sought to make an original contribution to the literature on Philippine ceramics by going beyond merely cataloguing pottery, and advocating a more holistic examination of ceramics. It has presented methods for good practice towards standardisation in ceramic studies. The intention of this research was to start with the earlier systems of using decorative traits and form to classify ceramics. This was then reassessed by applying modern techniques to examine the validity of pre-existing methodologies, and evaluate how they relate to the techniques of manufacture and fabric groups that also reflect learning traditions. By systematically

assessing the ceramic attributes, these units of analysis can be used for inter-site comparisons, and may contribute towards a regional framework for analysis. The pottery wares and types provide a catalogue and database for further inter-site comparisons. This thesis provides one of the most extensive studies of ceramic petrography in the Philippines to date (*cf.* Arriola 2010; Cayron 2012; De Leon 2008; Mijares 2005; Yankowski 2005, 2008). The thin sections contribute towards a comparative database for petrographic studies in the region. This research makes a strong contribution to the understanding of fabric and temper technology in the Philippines. Investigating fabric technology was the starting point for the identification of types which showed variation on many levels which lead to identifying learning traditions. The clay preparation techniques can be considered a question of habit (*cf.* Livingstone Smith 2000: 38) and there is a wealth of social knowledge in these processes that are not evident in the final product. These micro-phenomena are not easily recoverable in the archaeological record. However, this research has aimed to highlight them by focusing on the *chaîne opératoire*.

This research has provided more certainty about the role of ceramics and what the ceramics were not used for, and it has elucidated part of the mortuary practice Ille Cave. Although there are disturbance issues at the site, this research has strongly shown that the Developed Metal Age and Contact Age periods meet at Ille through material culture and possible interaction between peoples from these periods. The Harris matrix makes a contribution to the life of the Palawan Island Palaeohistoric Research Project (PIPRP) and provides clear documentation and understanding of the stratigraphy that can be used by the Project Team.

This research connects pottery from the Philippines to the rest of Southeast Asia, but it avoided uncritically accepting the overarching narratives of cultural movement and change in Island Southeast Asia. This research attempted to engage with the grand narratives laid out by the Austronesian Expansion and the Nusantara hypothesis by looking at small scale interactions, but detailed characterisation of comparative ceramics in the region, or any secure dating, has made it impossible to contribute to these debates. Instead, this research has presented ways to discuss and understand

people as communities of practice through their learning traditions; this could be developed as a stronger basis for future comparative work in the region. It also presents social groups as complex heterarchies as an example of social organisation in the Philippines which may prove a more useful basis for comparison with other Southeast Asian societies. By considering the users of Ille Cave as complex heterarchies, this allows people and their practices in these periods to be seen as highly technical with complex social relations without assuming the hierarchies and economic models found in most theories of social complexity. It has shown how archaeological theories can be successfully applied to new datasets in under-researched and developing parts of the world, thus showing the relevance of this study outside of the region.

This research has brought together and examined a large amount unpublished reports and conference papers, excavation records, site surveys and field notes, only available at the University of the Philippines-Archaeological Studies Program (UP-ASP) and usually difficult to obtain outside of the Philippines. This literature is important in the context of the development of Southeast Asian Archaeology as it provides detailed comparative data and is original, relevant and recent. The post excavation analysis was made stronger by being carried out at the University of the Philippines working directly with local archaeologists to understand local issues whilst being critical of generalising approaches which have shaped this research. Overall, this thesis makes a contribution towards the knowledge base in the Philippines. It is useful for the University of the Philippines-Archaeological Studies Program and the National Museum of the Philippines, as the ceramic methodologies, theories and questions posed in this thesis can be applied to ceramic assemblages at ongoing and new excavations in the Philippines. The findings and conclusions can also be applied comparatively to ceramic assemblages in wider Southeast Asia.

8.3 Recommendations and future research

This thesis questioned the usefulness of overly-generalising concepts like ‘Sa Huynh-Kalanay’ when there is a lack of chronology or basis for detailed comparison of

ceramics in Southeast Asia. There is no ceramic typology linked to chronology and no cultural phases identified across Island Southeast Asia or even across the Philippines. Although these issues are outside the scope of this thesis, they are essential for advancing the understanding of ceramics. A local and regional chronology is critical. A regional sequence is currently being developed using Thai materials (White 2011) which may impact on the chronology of Island Southeast Asia. However, a regional chronology can only be achieved by collaborations between scholars and researchers across Southeast Asia and it is beyond the scope of any one research group. There are further gaps in knowledge concerning the organisation, production, and distribution of ceramics. Regarding Ille, the nature and problems with the stratigraphy of the site makes it impossible to construct a pottery chronology at present. Therefore, this research does not attempt to solve the problem of chronology (*cf.* Cole 2012) but contributes to an improvement in research methods and to a clearer discussion of research issues.

At the beginning of this research, it was hoped that by constructing the Harris matrix, it would provide a good stratigraphic record. However, the complete site Harris matrix on which the matrix for this thesis is based was not available until late into this research and took many years to complete. The upper layers of the site were badly disturbed by turbation and bioturbation, and poor labelling in the field meant that some ceramic contextual information was lost. The excavations at Ille Cave, the Dewil Valley and Sibaltan sites are ongoing and systematic archaeology, including field excavating, recording and post excavation analysis, in the Philippines is still developing. Better stratigraphic control, accessioning and databasing is needed but this is improving.

The priority for future research should be the precise dating of the earthenware pottery. This can be achieved through the dating of the pottery itself (e.g. using thermoluminescence, optically stimulated luminescence, or rehydroxylation). However, this is costly and there is little guarantee of success. Direct dating of the Ille earthenware would allow for better and more precise dating of archaeological periods, regardless of assumed technological-based periodisation, to provide a more robust

frame for regional chronologies. The excavation of sites with more secure stratigraphy and the dating of associated materials would be of even greater importance in helping to date these materials and providing a clearer context of how the ceramic sequence developed in relation to other activities.

With the ceramics themselves, the broad types were identified in the field and during post-excavation analysis. Therefore, types were based on the whole excavated assemblage. This group was sampled for the macroscopic analysis and then a smaller sample was thin sectioned to clarify the types. The very broad divisions created in the field have held up and are supported and justified by the thin section analysis. It would now be possible to go back to the sampled sherds (1902 sherds or 10.75% of the assemblage) as well as the overall excavated assemblage and clarify the typology to see how many sherds would fit into the types that this research has created. It is most likely that the groupings are correct and thus further refining could now be carried out on a larger scale to check the robustness of the wares, types and subtypes as ceramic groups.

Another important avenue for research is further thin sectioning. Ceramic petrography offers a strong potential for future research because of the variability of the ceramic fabrics. However, this endeavour requires funding for the creation of thin sections, access to equipment, and training (*cf.* Quinn 2013; Rice 1987: 309; Whitbread 1995: 367, also 1989). In addition to thin sectioning more sherds to further confirm the types that have been established, a good ceramic group to analyse further would be the 'plain' undecorated sherds with no diagnostic form elements, to assess the range of variations in fabric and temper, and other technological practices. The earthenware ceramics from the Dewil Valley, wider El Nido, and Linaminan, central Palawan, would benefit from thin section analysis as a comparative dataset to examine fabric similarities and what technological differences exist between those sites and Ille Cave. Further work that needs to be undertaken in the Dewil Valley includes geologically mapping the archaeological area and its environs, and the identification and analysis of clays and other locally available raw materials such as alluvial sediments which could have been used for temper. Rocks, such as schist samples from

the local area, could be examined in thin section and compared to the schist elements in the pottery thin sections. These activities will help further provenance the ceramics.

A vital exercise regarding the ceramics should be the refitting of the earthenware pottery. This was impossible due to time and physical constraints. Since the post-excavation analysis was carried out, the Archaeological Studies Program have moved into larger premises at the University of the Philippines and this endeavour should now be possible. Starting with the bags of hundreds of sherds, this would allow an investigation into the form and function of the ceramics and further understanding of the role of ceramics, perhaps beyond the ritual function as discussed in this research. The refitting of ceramics might contribute to re-quantifying and recontextualising the assemblage in light of whole vessels and the potential for identifying differences in the location and fragmentation of distinctive ceramic types allowing a better consideration of spatial patterning within the cave.

Further use of the methods presented in this thesis could contribute towards building a comparative dataset with similar units for comparison and analysis. By analysing the technological processes and reconstructing the *chaîne opératoire*, this could further develop the communities of practice approach to understanding people and social organisation. The analytical techniques could be applied to any earthenware dataset excavated by the UP-ASP, to the earthenware in the stores at the National Museum of the Philippines, for example, the previously excavated Tabon earthenware, should it become available in the future, or to the currently excavated Tabon earthenware.

It is laudable that excavations continue apace amassing large collections, but researchers need to analyse these assemblages in detail and look at regional patterns in relation to wider Philippines and Island Southeast Asia. However, there are problems with badly disturbed sites and standardisation in terms of how sites were excavated and recorded which need to be taken into account when analysing assemblages.

In light of the limitations, and with the practical realities of fieldwork and the ceramic assemblage, the research questions posed in this thesis were appropriate for the dataset especially when fundamental data, such as quantity and characteristics, had to be collected before any analysis or interpretation could take place. An appropriate methodology was designed to assess ceramic attributes and identify learning traditions which indicated people and their practices. With more excavations, the increase in Filipinos carrying out archaeological research and more archaeologists from international collaborations working and bringing their scientific expertise to bear, archaeology in the Philippines is past the 'pioneering' and 'potential' stage and has moved into the 'establishing' stage. It is hoped that the work conducted in this thesis will pave the way for future research dealing with questions of interaction and complexity which have been raised. Ceramic and petrographic studies in the Philippines and across Southeast Asia will continue on a greater scale in the future, which will allow the conclusions of this thesis to be examined and revised in the light of new information.

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